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## **THE POWER BEHIND THE BIKE**

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Lafree Europe began life in June 1999 as an independent division of Giant Europe. In terms of experience, we couldn't have a bigger name behind us. Giant is presently the world's largest manufacturer of quality bicycles. The company enjoys an international reputation for constant innovation and has pioneered many of the most advanced developments in bicycle design and manufacturing technology. For further Lafree information, see page 2.

Now, with the introduction of the Lafree electric bike, Giant has given traditional pedal power an added boost, bringing an entirely new cycling experience. The Lafree power-assisted bicycle is a convenient, healthy and environmentally friendly form of personal transportation that combines both functionality and fun. The Lafree is the perfect solution to today's ever increasing traffic and parking problems.

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# 1

## READ THIS MANUAL!

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Please read all information in this manual carefully in order to gain maximum performance, safety and enjoyment from your Lafree electric bicycle.

Congratulations! You have just pedalled into the exciting world of electric power assistance for bicycles. In addition to being a full-featured bicycle, Lafree has an integrated on-board electric power assist unit. The power assisted pedal and Variable Power Control (VPC Throttle) systems are both easy to use and understand. However, due to their sophisticated technology, it is extremely important that you follow the directions for their operation carefully and completely. Failure to do so could cause damage to the motor, energy set (battery pack/charger unit), VPC Throttle components, or the entire bicycle.

Even though Lafree functions as a standard bicycle, you should still review the chapters on bicycle operation, especially if you haven't

ridden/owned a bicycle within the last 10 years. Component performance and configuration has changed dramatically, and while they are easy to use and understand, they may not look quite the same as what you are familiar with! Taking a few moments now to understand Lafree's operating procedures will help you get the most out of every ride.

Please read chapter 6, "Charging the Energy Set" before operating Lafree's electric powered functions. Lafree's Energy Set (Battery Pack/Charger Unit) must be charged completely before motor (power assisted pedal, Variable Power Control) can be operated.

### 1.1 Trademarks

The following trademarks are registered trademarks of Lafree in Europe and other countries.

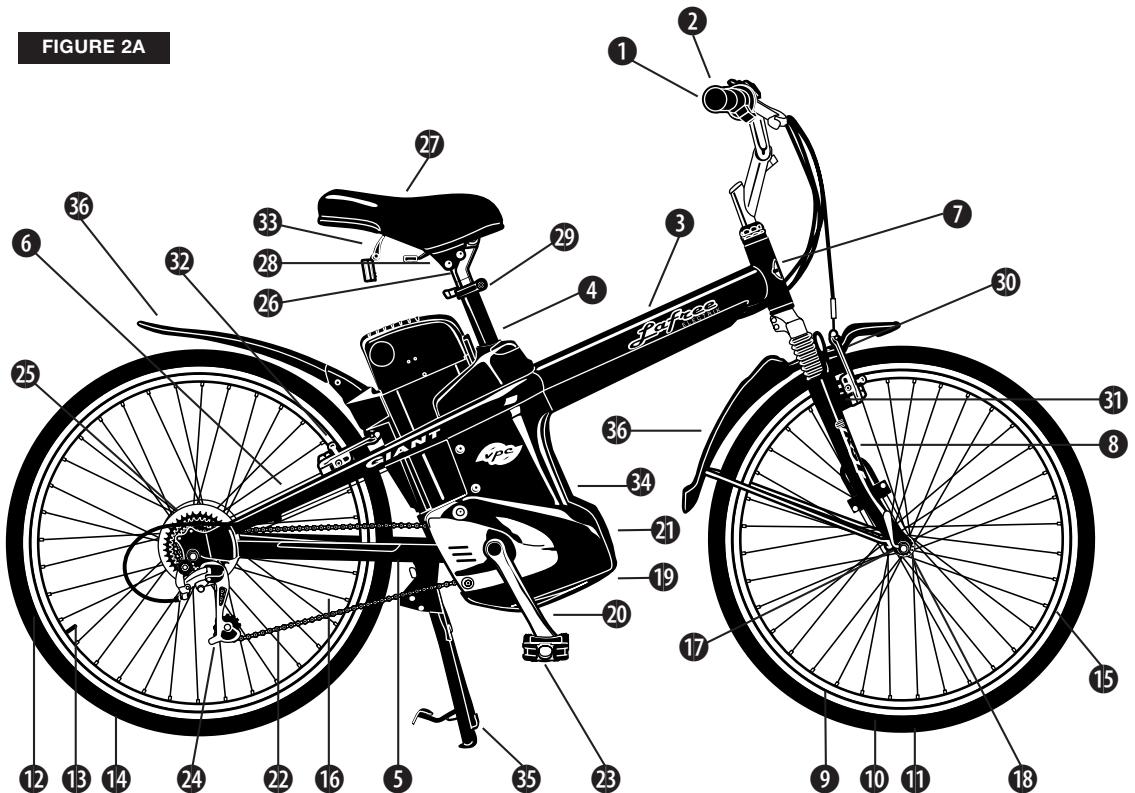
- Lafree®
- VPC®

# 2

## WHAT IT'S CALLED

1. VPC-Variable Power Control throttle-right side
2. derailleur/hub gear shifter - left side
3. primary frame tube
4. seat tube
5. chain stay
6. seat stay
7. head tube
8. rigid/suspension fork
9. front wheel
10. tyre
11. tread
12. sidewall
13. valve stem (part of innertube)
14. innertube (inside tyre)
15. rim
16. spoke
17. hub
18. quick release cam lever
19. bottom bracket (inside motor housing)
20. crank arm
21. chainring (inside motor housing)
22. drive chain
23. pedal
24. rear derailleur
25. freehub/gearhub
26. seatpost
27. saddle
28. saddle hinge release lever
29. seat post binder quick-release cam lever
30. linear pull front brake
31. brake shoe
32. linear pull rear brake
33. reflector
34. motor housing
35. support stand
36. splash guard/fender (front and rear)

FIGURE 2A



## 2.1 Energy set & Diagnostic Readout

1. charger plug/extension cord
2. carrying handle
3. key set receptacle/power switch

4. energy indicator
5. Self-Test button
6. charge level indicator lights

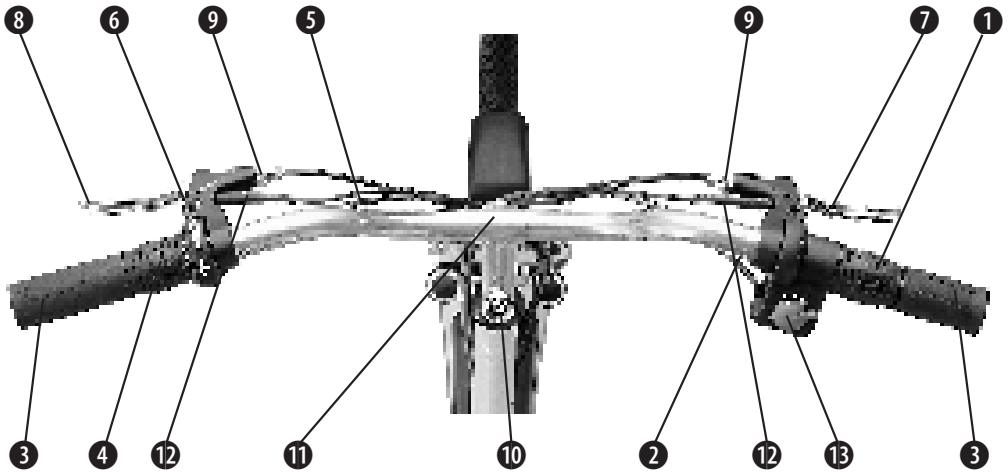
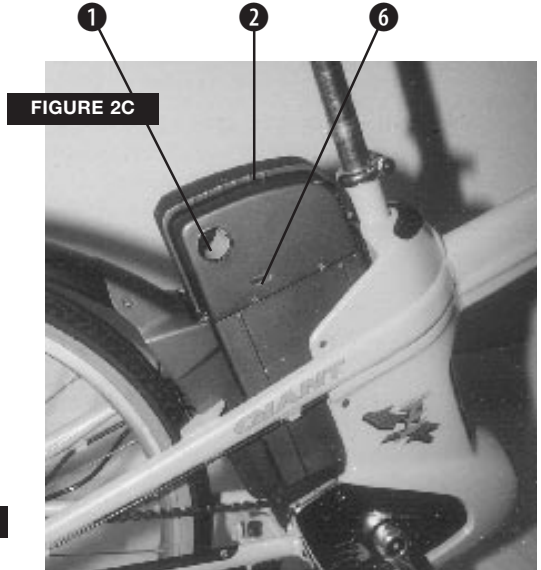
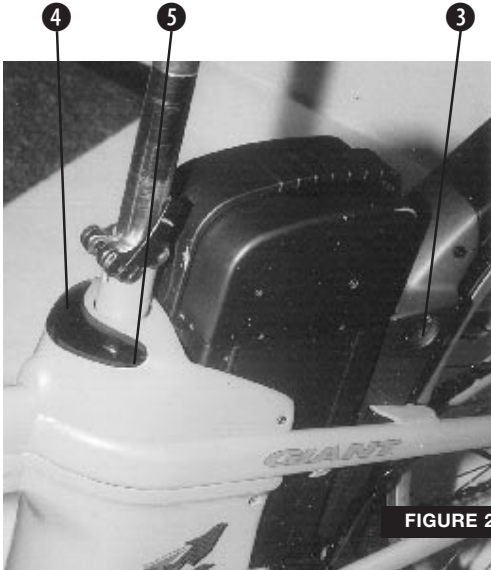


FIGURE 2D

## 2.2 Control centre (handlebar)

1. Variable Power Control (twist throttle)
2. Variable Power Control cable
3. grip
4. rear derailleur gear shifter (Grip Shift)
5. shifter cable
6. shifter adjusting barrel
7. rear brake lever

8. front brake lever
9. brake adjusting barrel
10. stem height adjuster bolt
11. handlebar clamp bolts
12. brake sensor wire
13. safety switch

## 2.3 Position of the Serial Numbers

Please record Lafree's bike serial number and battery serial number for future reference. The serial number of the bike is stamped into the left rear "dropout" of the frame. The dropout is the piece of frame that holds the left-side axle of the rear wheel (Fig 2E).

FIGURE 2E



# 3

## WHAT IS LAFREE ?

The Lafree power assisted electric bicycle is a new approach to cycling, bringing together human power and the power of electronic technology to create a totally new cycling experience!

Lafree's exclusive power assisted pedal system and Variable Power Control (VPC Throttle) enhance the enjoyment of riding an ordinary adult bicycle by giving you an extra boost for climbing hills or riding into a headwind—all automatically, efficiently, and instantly.

Lafree's advanced on-board torque/speed sensor automatically adjusts to rider input and determines how much assistance is needed. The VPC Throttle feature allows you to manually override power assisted pedal for extra and/or prolonged assistance.

### **PAP: Power-Assisted Pedal**

Simply turning the power on activates Power-Assisted Pedalling. A torque sensor, housed within the gearbox, "senses" the rider's input. The electric motor then responds with measured power. Pedal input is required for motor output.

### **VPC: Variable Power Control (VPC Throttle)**

Variable Power Control allows you to fine-tune the features already available in the Power-

Assisted mode. You control the amount of power output simply by twisting the VPC Throttle.

### **3.1 Frequently Asked Questions (FAQ's)**

Q: Do I need any special skills or licenses to ride Lafree?

A: Special permits or licensing may be required to operate Lafree. Check with your national regulations. In all instances, it is essential that you know how to ride a standard bicycle before attempting to ride Lafree.

Q: What is the "range" of Lafree's Energy Set?

A: Your range will vary depending on the road surface and how much you use the Variable Power Control (VPC Throttle). The range of the Energy Set at full VPC Throttle output on flat terrain with no headwind is approx. 30-40 km.

Q: How long does it take the Energy Set to fully charge?

A: Approximately four hours (when battery has less than 1% remaining energy).

Q: Will the motor assist continue when I put on the brakes?

A: No. This important safety feature shuts the motor off any time the brakes are applied. To resume power assist, simply start pedalling.

Q: How many charges will the Energy Set accept before needing replacement?

A: Lafree's lead acid battery can be charged from 300-400 times before replacement.

Q: What are the advantages of the sealed lead acid battery set that Lafree has chosen?

A: The lead acid battery uses "deep cycle" technology, allowing the chemical reaction to occur within the battery without the need for an alternator, such as with a car or motorcycle. This means that the energy is recycled through the battery each time it is charged, making it more efficient and safer to handle.

Q: Can I ride Lafree without the battery?

A: Although Lafree can be ridden as a standard bicycle, it is strongly recommended that you do not ride without the Energy Set in place. If you DO choose to ride without the Energy Set, do not place any items in the energy set compartment other than the energy set as damage may occur to the battery leads.

Q: Where can I charge my Lafree?

A: Lafree's Energy Set can be charged at any 110/240 volt grounded electrical socket.

Q: What happens when the Energy Set becomes depleted?

A: When the energy level in Lafree's battery reaches one percent of maximum capacity, the battery needs to be re-charged. Simply plug Lafree's power cord into any approved power outlet (see Section 6.1, Charging the Energy Set).

Q: Will temperature effect the range of Lafree's Energy Set?

A: Extremes in heat and cold may effect maximum energy range (see Section 6).

Q: What is the maximum speed of Lafree?

A: The maximum speed under full VPC Throttle assist is 25km/h. Once Lafree has reached or exceeded 25km/h, the motor will automatically disengage until the speed falls below 25 km/h.

Q: Can I ride my Lafree in the rain or through puddles?

A: Yes. However, you should not spray water directly at any of the electrical components, which include the Energy Set, motor, VPC Throttle, and energy indicator.

Q: Does an electric bicycle require any special maintenance?

A: The standard bicycle parts can be serviced by the owner if the correct tools are used. However, there is no user serviceable components in the Energy Set, drive motor, or VPC Throttle components. We recommend that you follow the service schedule and take your Lafree to an authorised Lafree dealer periodically.

# 4

## BIKE SIZING AND SAFETY

### 4.1 Size

**WARNING:** A bike that is too big or too small for the rider can be difficult to control and can be uncomfortable. If your bicycle does not fit properly, you may lose control and fall.

#### 4.1.1 Frame size

Lafree's sloping "primary frame tube" allows for greater standover clearance for a wide variety of riders (clearance between primary frame tube and top of inseam while straddling the bike just in front of the saddle). Your dealer will have made sure you had the correct standover clearance, based on physical examination. If someone else selected a Lafree for you, as a gift, for example, it is important to have the correct standover clearance before attempting to ride it (Fig. 4A). If you cannot stand flat-footed with feet at shoulder width without coming into contact with the primary frame tube, we strongly suggest that you do not attempt to ride Lafree.



FIGURE 4A

To check for safe standover height, straddle the bike while wearing the kind of shoes in

which you'll be riding, and with feet shoulder (pedal) width apart. If the top of your inseam (crotch) touches the frame, the bike is too big for you.

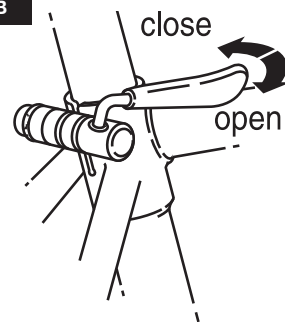
#### 4.1.2 Saddle Position

Saddle height and position are extremely important factors in determining your comfort and performance. Due to Lafree's unique hinged saddle, fore/aft saddle position is fixed. However, the most important aspect of saddle position - saddle height - can and should be adjusted for maximum comfort and pedalling efficiency.

##### 4.1.2.1 Height Adjustment

Put your heel on the pedal at its lowest position. Your leg should be stretched with a slight bend in the knee. Use this as a rule of thumb. If you do not feel comfortable, slight adjustments may be necessary.

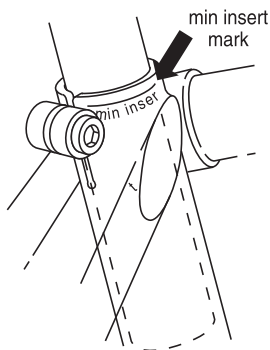
FIGURE 4B



QR Binder

To adjust the saddle height: Loosen the seat binder quick-release cam lever (Fig. 4B; see also Section 7.8 on Seat Post Quick-Releases) and move the seat post up or down as required. Re-tighten the seat binder, securing it so that the post does not twist. Check the adjustment as described above. Under no circumstances should the seat post protrude from the frame beyond its "Minimum Insertion" or "Maximum Extension" mark (Fig. 4C).





**FIGURE 4C**

**WARNING:** If the seat post protrudes from the frame beyond the Minimum Insertion or Maximum Extension mark (see Fig. 4C) the seat post may break, which could cause you to lose control and fall. Riding Lafree with the seat post protruding from the frame beyond the Minimum Insertion or Maximum Extension mark can also damage the frame.

**WARNING:** After any saddle adjustment, be sure to tighten the saddle adjusting mechanism properly before riding. A loose seat post binder can cause damage to the seat post, or can cause you to lose control and fall. Periodically check to make sure that the saddle adjusting mechanism is properly tightened.

### 4.1.3 Handlebar Height and Angle

#### 4.1.3.1 Handlebar position

The position of the handlebar is important for comfortable cycling. When adjusting handle bar position, refer to torque setting table at section 8.2.

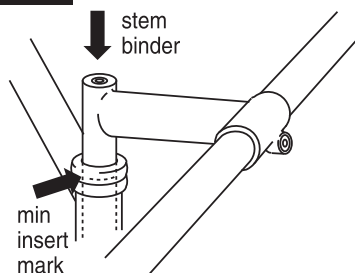
**WARNING:** The stem's Minimum Insertion Mark must not be visible above the top of the headset (see Fig. 4D). If the stem is extended beyond the Minimum Insertion Mark the stem may damage the fork's steerer tube or break, which could cause you to lose control and fall.

Handlebar position can be adjusted as follows

#### 4.1.3.2 Handlebar stem height

There is no general rule for the height of the handle bar. For a more sportive riding position, choose a lower position. For a more recreational riding position choose a higher position. To adjust the handlebar height: loosen the stem binder bolt (Fig 4D) three or four turns. Tap the bolt carefully down, using a plastic or wooden hammer. Set the handlebar stem at the correct height and perpendicular to the front wheel. Fasten the bolt to the correct torque.

**FIGURE 4D**



#### 4.1.3.3 Handle bar angle

By tilting the handle bar you can direct the grips more upward or downward. This is a matter of personal taste. Loosen the bolt at the front side of the handle bar stem. Tilt the handle bar to the required position. Fasten the bolt to the correct torque. Check and if required adjust the position of the brake levers.

#### 4.1.3.4 Handle bar stem angle

Some models are equipped with an adjustable handle bar stem. This allows you to adjust the angle of the handle bar stem extension. Loosen the inclination bolt and set the extension to the required inclination. Fasten the bolt to the correct torque. Check and if needed adjust the position of the brake levers.

## 4.2 Safety Equipment

**WARNING:** Many countries require specific safety devices. It is your responsibility to familiarise yourself with the laws where you ride and to comply with all applicable regulations, including properly equipping yourself and your bike as the law requires.

### 4.2.1 Reflectors

Reflectors are important safety devices which are designed as an integral part of Lafree. The reflectors are designed to pick up and reflect street lights and car lights in a way that helps you to be seen and recognised as a moving bicyclist.

**CAUTION:** Check reflectors regularly to make sure that they are clean, straight, unbroken and securely mounted. Have your dealer replace damaged reflectors and straighten or tighten any that are bent or loose.

### 4.2.2 Lights

If you ride your bike after dusk, your bicycle must be equipped with lights so that you can see the road and avoid road hazards; and so that others can see you. Vehicle laws treat bicycles like any other vehicle, which means an illuminated white front, and a red rear light, not just reflectors, if you are riding after dusk. A properly fitting lighting system is being offered as a Lafree optional accessory. Please ask your dealer.

## 4.3 Mechanical Safety Checks

Lafree is equipped with several unique safety features, described in more detail in section 7.

- Speed Actuated Motor Shut-Off- Automatically disengages motor when Lafree reaches 25 km/h.
- Brake Actuated Motor Shut-Off- Automatically disengages motor when one or both brakes are applied.
- Automatic Key Lock-Locks Energy Set into place when ignition is at ON position.

- Self Diagnostic Sequence-Automatically checks that VPC Throttle, Brake Actuated Motor Shut-off, and the torque sensor are functioning.
- Safety switch disables the motor-electric assist simply by flipping the handlebar mounted switch to the off position.

Please be sure to familiarise yourself with these features before operating Lafree. Here is a simple, sixty-second mechanical safety check which you should get in the habit of making every time you're about to get on Lafree.

### 4.3.1 Diagnostic Readout

Lafree is equipped with a five-point diagnostic check of the electronic features:

- front and rear brake motor cut-off function
- VPC Throttle function
- torque sensor function
- speed sensor function

To initiate diagnostic sequence, turn ignition to ON position and push Self-Diagnostic button.

### 4.3.2 Nuts & bolts

Inspect the bike closely from front to rear for any obvious signs of worn or broken components. Grasp the handlebar with both hands and lift the front wheel off the ground about 5-10 centimetres, then let it drop firmly on the ground while still holding the handlebar. If anything sounds, feels or looks loose, do a quick visual and tactile inspection of the whole bike. Try to find the source of noise or any obvious loose components, and secure them. If you're not sure, ask someone with experience to check, or take your Lafree to your authorised service centre.

### 4.3.3 Tyres & Wheels

Check proper tyre inflation by placing your hand directly on top of each individual tyre. With a straight arm and direct downward pressure, push on the tyre with downward body weight and watch the spot where the tyre is contacting the ground. There should be very little tyre compression. If your tyres need

inflating, use a standard bicycle floor pump. If you must use a high-volume compressor like those found at automotive service stations, add air in small amounts as these compressors are designed to fill auto tyres which have much larger volumes than bicycle tyres. A surge of pressure could cause the innertube to explode, which can cause severe damage to the tyre and serious injury.

Spin each wheel slowly and look for cuts in the tyre's tread and sidewall. Replace damaged tyres before riding the bike.

Spin each wheel and check for brake clearance and side-to-side wobble of the rim. If a wheel wobbles side to side or contacts the brake shoes (front brake only), take the bike to a qualified dealer to have the wheel aligned.

**CAUTION:** Wheels must be “true” (aligned) for the brakes to work effectively. Wheel truing is a skill which requires special tools and experience. Do not attempt to true a wheel unless you have the knowledge and tools needed to do the job correctly.

#### 4.3.4 Brakes

Lafree offers models with rim brakes (Fig 4E, 4F) and with disc brakes. Visually inspect for proper cable routing.



FIGURE 4F



Squeeze the brake levers. Brake levers should engage hoes/rear roller brake at approximately half way through their arc, or within about 2,5 centimetres of handlebar grip. To check proper brake lever travel, encircle the hand grip with your thumb and forefinger, then squeeze the brake lever with the remaining three fingers of each hand. If you can squeeze the levers so that they touch your forefinger, you should have a qualified service centre adjust your brakes.

Make sure that the front brake's brake shoes are contacting the rim's braking surface fully (Fig. 4H). Also check that the shoes are not coming into contact with the tyre's sidewall whilst applying the brake. Riding the bike with brake shoes contacting the sidewall can cause the tyre to be damaged and the innertube to puncture, which may cause you to lose control and fall. Do not ride the bike until the brakes are properly adjusted. See Section 7.9 for details.

**WARNING:** Riding with improperly adjusted brakes or worn brake shoes is dangerous and can result in serious injury.

Please see the attached owners manual for information on disc brakes.

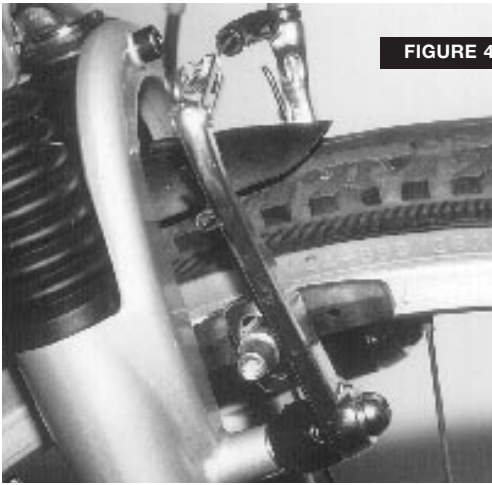


FIGURE 4H

#### 4.3.5 Quick-Releases

Check to see that the front and rear wheel and seat post quick-release levers are properly adjusted and in the CLOSE position. See Section 7.7+ 7.8 for details.

***WARNING: Riding with an improperly adjusted wheel quick-release can cause the wheel to wobble or disengage from the bicycle, which can cause damage to the bicycle or serious injury.***

#### 4.3.6 Handlebar and saddle alignment

Are the saddle and handlebar stem correctly in line with the bike's top tube and tight enough so that you can't twist them out of alignment?

#### 4.3.7 Handlebar ends

Are the handlebar grips secure and in good condition? If not, replace them. Are the handlebar ends plugged? If not, plug them before you ride.

You are now ready to safely ride your Lafree. However, we suggest that you take a few moments to review the following chapters on riding tips and safety, especially if you have not ridden a bicycle in a long time.

**NOTE:** Riding a bicycle involves certain risks, including damage and injury. By choosing to ride a bicycle, you assume personal responsibility for those risks. The people who sold you the bike, the manufacturer, the distributor, and people who manage or maintain the roads and trails you ride on are not responsible for your actions. Therefore, it is extremely important that you understand and practice the rules of safe and responsible riding, and to use common sense whenever possible and applicable.

### 5.1. The Basic

Carry out the Mechanical Safety Check (Section 4.3) before you attempt to ride Lafree. In addition, make sure that you always follow the electronic diagnostic procedure for Lafree's power assist features.

### 5.2. Rules of the Road

1. Learn the local bicycle laws and regulations. Many countries have special regulations about licensing of bicycles, riding on sidewalks, laws regulating bike path and trail use, and so on. Many countries have helmet laws, child carrier laws and special bicycle traffic laws. In most countries, a bicyclist is required to obey the same traffic laws as the driver of a car or motorcycle. It is your responsibility to know and obey the laws.

2. Some Lafree models are equipped with a front suspension (suspension fork). When braking, the front suspension compresses and the front end may drop noticeably. You could lose control and fall if your riding skills are not sufficient to negotiate this mechanical function of the suspension fork. Familiarise yourself with your suspension by practising braking in a safe area on flat ground before riding at higher speeds over varied road surfaces.

### 5.3 Wet Weather Riding

Under wet conditions, the stopping power of your brakes (as well as the brakes of other

vehicles sharing the road) is dramatically reduced, and tyre-to-surface adhesion ("traction") is also compromised. This makes it harder to control speed and easier to lose control. Whenever wet conditions are present, reduce speed and apply your brakes earlier and more gradually than you would under normal, dry conditions.

### 5.4 Night Riding

Riding a bicycle at night is much more dangerous than riding during the day.

**WARNING:** *Riding at dusk, after dark or at times of poor visibility without a bicycle lighting system which meets national laws and without reflectors is dangerous and can result in accidents.*

Before riding at dusk or at night, take the following steps to make yourself more visible:

- Make sure that your bicycle is equipped with correctly positioned and securely mounted reflectors (see Section 4.2.1, "Reflectors").
- Make sure that lights and reflectors are not obstructed by your clothing, accessories, or anything you may be carrying on the bicycle.

# 6

## ELECTRIC ENERGY SET OPERATION

### 6.1 Charging the Energy Set (lead acid battery)

Lafree's portable Energy Set has a self-contained charger, allowing charging of the battery virtually anywhere, with or without the bicycle. Although Lafree can be ridden as a standard bicycle, it is strongly recommended that you do not ride without the battery pack in place.

**CAUTION:** If riding Lafree without the Energy Set, do not place any items in the energy set compartment other than the energy set as damage may occur to the battery leads.

#### To charge the battery while Energy Set is on the bicycle:

Turn ignition to the OFF position.

Park Lafree by placing Lafree's support stand in its down and locked position. Charging area should be level, with good ventilation. Do not

place Lafree or the Energy Set in direct sunlight, near a heat source (water heater, furnace, fireplace, etc.), or in contact with moisture while charging (Fig. 6A).

**CAUTION:** Do not attempt to charge Lafree's Energy Set in temperatures below 0 degrees Celsius or above 40 degrees Celsius.

**WARNING!** Do not touch battery while charging is taking place as battery can reach temperature of up to 50 degrees Celsius.

Lift the Energy Set's charging cord cover, grasp the plug, and pull to extend cord. If the cord is difficult to extend or is jammed, do not pull on plug with force.

Insert the plug into the electric outlet, making sure that all pins are inserted fully into the socket. Keep outlet area well ventilated and free from debris to avoid fire from sparks or overheating.

When plug is inserted into outlet, the Energy Set's red power light (located on right side of Energy Set below charging cord) will illuminate, indicating that electricity is flowing to the battery. This also indicates that energy level is at or below 80 percent of full charge.

When charging is at or above 81 percent, the green power light (located next to red power light), will illuminate. Battery will reach full capacity after approximately four hours. See chart in this section for charging times.

Lafree's Energy Set is equipped with "floating charge" circuitry. Charging Energy Set after maximum capacity has been reached will not harm the battery.

Be aware that the output of a fully charged battery set may vary approx. 10%. As a consequence this varies the autonomy.



FIGURE 6A

**CAUTION:** Please read the following general safety tips for charging Lafree's lead acid battery:

- Do not park Lafree or place Energy Set in direct contact with moisture, sunlight, or a heat source while charging.
- Energy Set must be level and upright (carrying handle on top, facing upward).
- The charging area must be level with good ventilation, protected from moisture and direct sunlight.
- You must charge Lafree's battery at an electrical outlet that has a grounded socket.
- Do not attempt to charge Lafree's battery in temperatures below 0 degrees Celsius or above 40 degrees Celsius.
- Place Lafree in an area that cannot be reached by children or animals.
- Do not attempt to charge Lafree with a broken or bent charging plug.
- Do not use any power source other than 110V-240V.
- Do not cover the Energy Set while charging.
- If you notice a strange smell or vapours/smoke, unplug charging cord immediately! Take Lafree to your authorised Lafree dealer for service or replacement.

## 6.2 Storage & Transportation

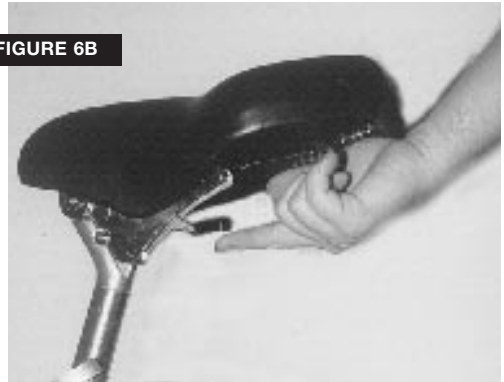
### 6.2.1 Removing, Charging, and Storing Energy Set

Lafree's Energy Set can be removed from the bicycle for easier charging and storage. When removing, carrying, and storing the Energy Set, always make sure it is in a level and upright position (carrying handle on top, facing upward), and that you never lay the Energy Set on it's side or tilt it at an extreme angle.

**WARNING:** *Never lay Energy Set on its side or tilt it at an extreme angle as damage to the lead acid battery can occur, as well as leakage of acid that can cause injury to body parts or damage to items and surfaces it may contact.*

To remove Energy Set for storage or charging away from the bicycle: Place Lafree's support stand in its down and locked position. Turn ignition to OFF position.

**FIGURE 6B**



### Battery Charge Times

LEDs illuminated	Power level	Charging times
1 Flashing	<1 %	3.5-4 hours
1	1-20 %	2-3 hours
2	21-40 %	1.5-2 hours
3	41-60 %	1-1.5 hours
4	61-80 %	.5-1 hours
5	81-100 %	.5 hours

(Charging times are for reference only. Actual charging times depend on age of battery and number of times it has been charged/discharged. Longer charging times may be necessary with older batteries.)



**FIGURE 6C**

Release the saddle's hinge mechanism by pushing on the lever located under the rear portion of the saddle (Fig. 6B). Lift up on the saddle and tilt it forward until the saddle is vertical (Fig. 6C).

Lift the Energy Set's retractable sliding carrying handle and pull up with one hand, supporting the bottom of the Energy Set with the other hand once it clears the Energy Set compartment (Fig. 6D).

Tilt the saddle back to its horizontal and locked position.



**FIGURE 6D**

When replacing the Energy Set, make sure the charger cord/power lights are on the right side (visible from the riding position) as you slide the Energy Set into its compartment. Carefully align the guide plate on the rear of the Energy Set with the compartment's grooves and slowly slide the Energy Set into place. You will hear a "click" indicating the base of the Energy Set is contacting the bottom of the compartment and battery leads.

### **To store the Energy Set**

Before storing, charge the battery to its maximum capacity. The Energy Set will discharge automatically and completely after three months. If you have stored the Energy Set for longer than two months without charging, discharge and recharge the battery. (Please repeat this every two months.) In case you forgot to discharge your battery after 2 months, a new recharge will be necessary. Your dealer will have the necessary equipment available in order to carry out this task for you.

**WARNING:** Leaving the Energy Set in a discharged state for longer than three months may effect the long-term life of the battery. Store Lafree/Energy Set in the OFF position. However, if left in the ON position, "automatic sleep" will engage after 10 minutes.

**CAUTION:** Store Energy Set in a low, cool, dry, level, secure area with good ventilation and away from any heat source.

If storing Lafree with Energy Set in place, turn ignition to OFF position. Leaving ignition in the ON position while stored or parked will result in more rapid energy loss.

### **6.2.2 Transporting Lafree**

When transporting Lafree, it is best to remove the Energy Set as it is easier to lift and manoeuvre the bicycle.

**CAUTION:** Never lay Lafree on its side with the Energy Set in place as damage to the lead acid battery can occur, as well as leakage of acid that can cause injury to body



parts or damage to items and surfaces it may contact. It is also best not to lay Lafree on its side in any case, as doing so can cause damage to the control components, motor housing, pedals, crank arms, and wheels.

### 6.3 Care & Maintenance

There are no user-serviceable parts in the Energy Set. If you suspect a problem, take Lafree and Energy Set to your authorised Lafree dealer.

When cleaning the Energy Set casing, use a cloth moistened with water only. Do not use solvents or cleaning solutions of any kind.

Lafree's lead acid battery must be disposed of or recycled properly. When the battery will no longer hold a charge, you must take it to your authorised Lafree dealer for replacement. Your authorised Lafree dealer is equipped to dispose of the battery according to local and other laws.

**CAUTION:** Please read the following general safety tips for care and maintenance of Lafree's Energy Set:

- Do not place Energy Set into a fire or near intense heat source as it can explode and cause serious injury.
- When cleaning the Energy Set casing, use a cloth moistened with water only. Do not use solvents or cleaning solutions of any kind.
- Do not attempt to open Energy Set's battery case or charging unit. There are no user-serviceable parts in the Energy Set. If you suspect a problem, take Lafree and Energy Set to your authorised Lafree dealer.
- Inspect the Energy Set periodically for cracks, unusual residue, or other abnormal appearance. Do not operate Energy Set with cracks or breaks in the casing.
- Do not attempt to use Energy Set as a power supply for anything other than Lafree.

- Always pull gently on the charging cord. Never yank or extend past its full length. To remove from power outlet, pull on the plug, not on the cord.

### 6.4 Radius of action

The radius of action is the distance you can cycle using the power assistance. The Lafree radius of action depends on two factors:

- the battery capacity
- the cycling circumstances and maintenance of the bicycle

Under the best possible circumstances, you can cycle approx. 30-40 km using the power assistance system. However, the following factors can influence the radius of action of your Lafree:

- the temperature
- the wind
- the weight of the rider and loading
- the number of stops and starts
- the terrain (flat, steep hills or slopes, pavement)
- the quality of tyres and chain

# 7

## HOW THINGS WORK

It is extremely important to the performance, enjoyment and safety of Lafree and yourself to understand how many of the features of Lafree operate. You should not assume that the way things have worked on previously owned bicycles operate similarly on Lafree, even if you're an experienced bicyclist. Be sure to read - and to understand - this section of the owner's manual. If you have even the slightest doubt about how any of the mechanical features of Lafree operate, talk to your authorised Lafree dealer.

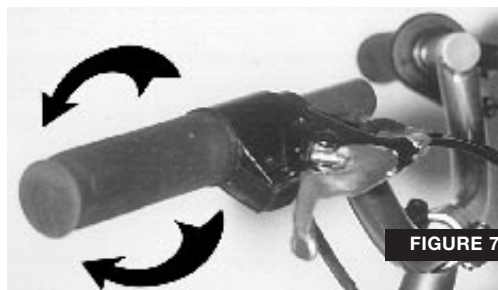


### 7.1 Variable Power Control (VPC Throttle)

Lafree's Variable Power Control (VPC) Throttle gives you instant access to the motor's power for going up hill or into a headwind, or if you simply don't want to use any of your own power! You control the amount of power output simply by twisting the right VPC Throttle.

Twisting the VPC Throttle in a counterclockwise direction against the grip's spring tension (rearward) applies power from the electric motor, while releasing the grip in a clockwise direction (forward) decreases power from the electric motor (fig. 7A).

The ignition-lockset and safety switch must be



ON. Lafree requires pedal input for motor output. This means that under any pedal exertion, Lafree will respond with electrical assistance. You can control the amount of power output simply by twisting the VPC Throttle, which is located on the right side of the handlebars.

When your speed reaches or exceeds 25 km/h, Lafree's motor will automatically disengage and stop assisting until the speed drops below 25 km/h. You must pedal to enable the motor to engage VPC Throttle. If you stop pedalling while VPC Throttle is in the ON (twisted counterclockwise) position, motor assist will cease until pedals begin turning again. The throttle must also be twisted completely clockwise (no power) then twisted counterclockwise again for VPC Throttle to engage.

For safety, do not pedal Lafree while the bike is leaned over in a turn and VPC Throttle engaged, as the pedal may come in contact with the ground or other elevated obstacle. It is best to put the pedals parallel to the ground at nine and three o'clock, or with the inside pedal (side the bike is leaning toward) at 12 o'clock and the outside pedal at six o'clock.

**WARNING:** For safety, do not pedal Lafree while the bike is leaned over in a turn and VPC Throttle engaged, as the pedal may come in contact with the ground or other obstacles and cause you to lose control and fall.

**CAUTION:** Using VPC Throttle exclusively drains energy more quickly. Use VPC Throttle sparingly for optimum energy range and consumption.

### 7.2 Power Assisted Pedal

Lafree's power assisted pedal system utilises a fuzzy logic CPU (central process unit) to provide constantly monitored power assistance based on speed and pedal force.

To engage power assisted pedal, turn ignition switch to the on position (please read Section 6.2.1, Charging the Energy Set, before operating Lafree’s electric functions). Begin pedalling as with a traditional bicycle. Power assisted pedal will automatically engage. Be sure to sit down on the bicycle first with both hands placed on the handle before riding away. Other ways of getting on and riding away could lead to dangerous situations.

To attain higher or lower speeds, shift the rear derailleur into the smaller or larger cogs as described in Section 7.10, “Shifting The Gears.”

When your speed reaches or exceeds 25 km/h, Lafree’s motor will automatically disengage and stop assisting until the speed drops below 25 km/h. You must pedal to enable the motor to engage power assisted pedal.

### 7.3 Energy Set Ignition

For the functioning of power assistance and the diagnostic features, the energy set ignition must be switched to the ON position. Please read Section 6, “Charging the Energy Set” before operating Lafree’s electric powered functions.

#### 7.3.1 The ignition switch

Your Lafree comes standard with two ignition keys to operate the ignition switch. Lafree’s ignition switch has three positions; OPEN, ON and OFF (fig. 7B):

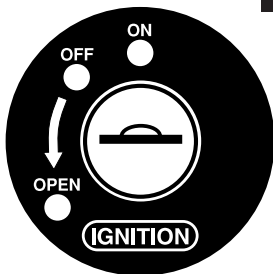


FIGURE 7B

- OPEN-Lafree’s electronic features will not function. The Energy Set can only be removed when the ignition is in the OPEN position.

- ON-The Energy Set provides power to the motor and electric features. The Energy Set is automatically locked into the Energy Set compartment when ignition is in the ON position.
- OFF-Lafree’s electronic features will not function. The Energy Set is locked into the Energy Set compartment and the key can be removed. (Use this feature for maximum security.)

#### 7.3.2 The safety switch

A remote ON/OFF switch, mounted to the handlebars, is integrated into the ignition system. This is called the safety switch. The safety switch must be turned to the ON position before electric assistance can be provided from Lafree’s motor. The switch can also be used to momentarily turn the Lafree’s electric assistance off during use.

Start Lafree by turning the key to the ON position. Following this, turn the safety switch to the ON position. You should hear an audible “Beep.” The amount of stored energy will then appear as 1-5 lights on the energy indicator located on the top front of the motor housing. Five lights on the indicator represent that Lafree’s Energy Set is fully charged.

**CAUTION:** When leaving Lafree unattended, turn ignition to OFF position and remove key. Leaving ignition in the ON position while parked will result in more rapid energy loss, and the potential for theft.

### 7.4 Self-Diagnostic Check

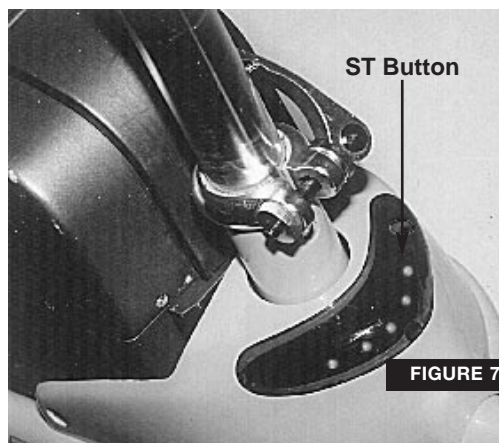
Lafree is equipped with an on-board five-point self diagnostic-check of the electronic features:

- front and rear brake-actuated motor shut-off function (audible beep sound)
- speed sensor function (audible beep sound)
- VPC Throttle function
- torque sensor function

To initiate self-diagnostic mode, engage Lafree’s support stand in its down position. Turn ignition to ON position (there will be a short beep). The Lafree keys are equipped

with a pin to activate the self-diagnostic check. Push and hold Self-Diagnostic switch, the small black rubberised button located to the left of the LED string/energy indicator (Fig. 7C). Release pressure on the button after hearing a long beep, indicating Self-Diagnostic check is ready to be performed. To perform diagnostic check, follow the directions below:

- Brake Actuated Motor Shut-Off-Pull on each brake lever individually. If functioning, a beep will occur each time the lever is pulled.



- Speed sensor: With the support stand in the down position, lean the bike over slightly until the rear tyre comes off the ground. Pedal the crank arm to get the rear wheel turning. If speed sensor is functioning, an audible beep will sound repeatedly as the magnetics on the magnetic "pie" plate are detected by the sensors until the wheel stops. Stop the rear wheel with the rear brake. Do not place the tyre back in contact with the ground while the rear wheel is moving.
- VPC Throttle: Rotate the right-hand twist grip. The VPC-throttle functions properly if all LED's light up from 1 to 5, depending on how far the VPC-throttle is turned up. Should one LED be skipped or fail to light up completely, your dealer needs to be contacted.
- Torque sensor: Place Lafree on its support stand. With one hand, put light pressure on either pedal while holding the rear tyre with the other hand and rotate the crank arm

forward until an audible beep is heard. Some or all of the LEDs may illuminate depending on how much pressure (torque) is being applied.

**CAUTION:** If any of these features fail the diagnostic check, take your Lafree to an authorised Lafree dealer immediately. Operating Lafree with the Energy Set on, but with any or all of these features inoperable could cause severe damage to the electronic circuitry and could cause you to lose control and fall.

To a) cancel Self-Diagnostic mode, b) re-set Self-Diagnostic mode, c) to turn on Lafree's power assist features after using the Self-Diagnostic mode - turn the ignition or the safety switch to the OFF position, then back to the ON position.

**WARNING:** *Never ride Lafree in the Self-Diagnostic mode as it could cause severe damage to the electronic circuitry. Lafree's power assisted pedal and VPC Throttle will not work while in the Self-Diagnostic mode.*

## 7.5 Light Emitting Diode (LED) Energy Level Indicator

Available energy is indicated via a Light Emitting Diode (LED) string, located on the top front of the motor housing. When fully charged, all five LEDs will be illuminated.

LEDs will only illuminate when ignition is on. As energy is used, fewer LEDs are illuminated. When only one lit LED remains, energy level is one percent. If energy level drops below one percent, motor will automatically shut down and one LED will flash. If motor shuts off and single LED begins flashing, turn ignition to OFF. Do not operate electric functions until at least a 40 percent charge (three LEDs illuminated) has been attained. Charge time for this level is depending on age of battery and how many times battery has been charged/discharged. See Section 6 for more information on battery charging times.

**WARNING:** Do not operate Lafree or leave ignition in ON position with less than one percent available energy as damage will occur to the battery.

LED's Illuminated	Energy Available	
1 Light Flashing	<1	%
1	1-20	%
2	21-40	%
3	41-60	%
4	61-80	%
5	81-100	%

## 7.6 Automatic Motor Shut-Off

Lafree is equipped with four automatic motor shut-off features.

1. **Low Energy Shut-Off:** If energy level drops below one percent, motor will automatically shut down and one LED will flash. If motor shuts off and one LED begins flashing, turn ignition to OFF immediately. See Section 6 for more information on battery charging times.
2. **Brake-Actuated Motor Shut-Off:** When one or both of Lafree's brakes are applied, electric power assistance (power assisted pedal, VPC Throttle) automatically disengages. To resume electric power assistance, simply release brake(s) and begin pedalling.
3. **Speed Motor Shut-Off:** When your speed reaches or exceeds 25 km/h, Lafree's motor will automatically disengage and stop assisting until the speed drops below 25 km/h.
4. In case the motor and/or processor become overheated, they will disengage; there will follow a sound and LED1 will flash.

## 7.7 Front Wheel Quick-Release Lever Cam

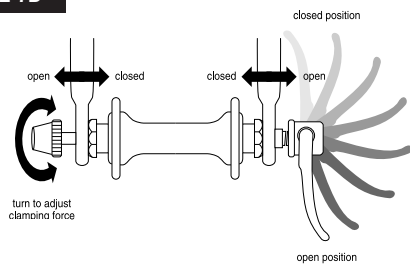
**WARNING:** Riding with an improperly adjusted wheel quick-release can allow the wheel to wobble or disengage from the bicycle, which may cause damage to the bicycle and serious injury to the rider. Therefore, it is essential that you:

1. Ask your dealer for assistance in installing and removing your wheels safely.
2. Understand and apply the correct technique for clamping your wheel in place with a quick-release.
3. Check that the wheel is securely clamped in the fork before each and every ride.

Because of its adjustable nature, it is critical that you understand how a quick-release lever cam works and how to use it properly.

While it may appear at first glance to be a nut and bolt configuration (a long bolt with a lever on one end and a nut on the other), in fact the wheel quick-release uses a cam action to clamp the bike's wheel in place (Fig. 7D).

**FIGURE 7D**



**CAUTION:** Holding the nut with one hand and turning the lever like a wing nut with the other hand until tight will not clamp the wheel safely in the dropouts. The full force of the cam action is needed to clamp the wheel securely.

### 7.7.1 Adjusting the quick-release mechanism

The wheel's hub is clamped in place by the force of the quick-release cam pushing against one dropout and pulling the tension

adjusting nut, by way of the skewer, against the other dropout. The amount of clamping force is controlled by the tension adjusting nut. Turning the tension adjusting nut clockwise while keeping the cam lever from rotating increases clamping force; turning it counterclockwise while keeping the cam lever from rotating reduces clamping force. Less than half a turn of the tension adjusting nut can make the difference between safe clamping force and unsafe clamping force.

**NOTE:** Once the quick-release is installed in the hub axle by the manufacturer or the dealer, it never needs to be removed unless the hub itself requires servicing. If the hub requires servicing, consult your dealer.

### 7.7.2 Front Wheel Secondary Retention Devices

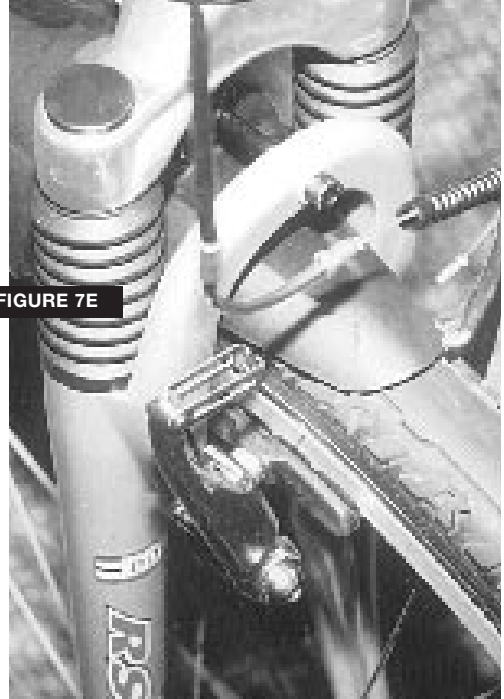
Lafree is equipped with a secondary wheel retention device to keep the wheel from disengaging if the quick-release is incorrectly adjusted or the cam opens accidentally. Secondary retention devices are not a substitute for correct quick-release adjustment.

Lafree's secondary retention device is integral with the fork dropouts and is recessed for the quick-release lever that keeps the wheel from dropping out of the fork's dropouts should the quick-release lever open accidentally. However, these tabs are not designed to keep the wheel in place should the quick-release lever open accidentally. If you hear or feel looseness coming from the front wheel, stop riding immediately and check the quick-release tension. Ask your dealer to explain Lafree's secondary retention device in more detail.

**WARNING: Removing or disabling the secondary retention device is extremely dangerous and may lead to serious injury. It also may void the warranty.**

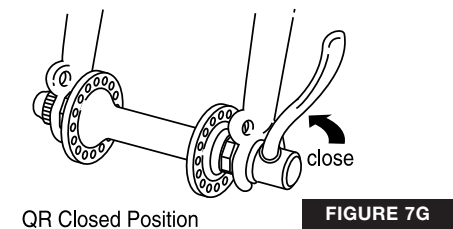
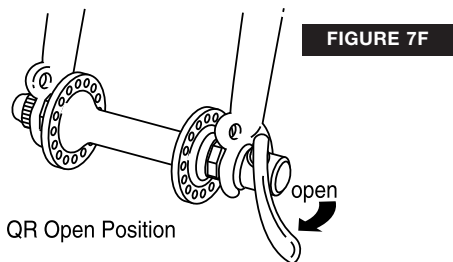
**WARNING: do not lean Lafree over on its side when removing the front wheel, as damage will occur to the lead acid battery. The only time Lafree's front wheel should be removed is to repair/replace a punctured innertube.**

Some models are equipped with axle nuts. For removing the front wheel, loosen the nut and follow the procedure. For installing the front wheel, refer to the torque setting table when fixing the nuts.



### 7.7.3 Removing Quick-Release Front Wheel

- Place Lafree's support stand in its down and locked position.
- Release the front brake's elbow cable guide and spread the brake shoes to allow the front tyre to move in between them (Fig. 7E).
- Rotate the wheel's quick-release lever from the locked or CLOSE position (you can read CLOSE on the lever) to the OPEN position (you can read OPEN on the lever) (Figs. 7F, 7G).
- Loosen the tension adjusting nut about six full turns.
- Raise the front wheel a few inches off the ground and tap the top of the wheel with



the palm of your hand to knock the wheel out of the front fork.

- (f). Lafree's support stand will hold the bike upright, but for additional safety we recommend that you place a support under the fork for added stability. Do not let Lafree rock forward onto the fork so that the fork is touching the ground as damage can occur to the lead acid battery.

**WARNING:** Lafree's lead acid battery must never be laid on it's side or tilted in any way. If removing the front wheel, do not let Lafree rock forward onto the fork so that the fork is touching the ground as damage can occur to the lead acid battery.

#### 7.7.4 Installing a Quick-Release Front Wheel

- (a) Rotate the quick-release lever so that it curves away from the wheel (Fig. 7C). This is the OPEN position (you can read OPEN on the lever).
- (b) Remove support from under fork. With the fork facing forward, insert the wheel between the fork blades so that the axle seats firmly to the top of the slots which are at the tips of the fork blades - the fork dropouts. The quick-release lever should be on the left side of the bicycle (Fig. 7F).

- (c) Holding the quick-release lever in the OPEN position with your right hand, tighten the tension adjusting nut with your left hand in a clockwise direction until it is finger tight against the fork dropout (Fig. 7D).
- (d) While pushing the wheel firmly to the top of the slots in the fork dropouts, and at the same time centring the wheel rim in the fork, rotate the quick-release lever upwards and push it into the CLOSE position (Fig. 7G). To do this use the palm of your hand while wrapping your fingers around the right fork blade and squeezing the lever closed using your fingers and hand together. You have the proper tension if the lever leaves an impression in the palm of your hand. The lever should be parallel to the fork blade/pointing upward and curved toward the wheel.

**CAUTION:** If you can fully close the quick-release without wrapping your fingers around the fork blade for leverage, and the lever does not leave a clear imprint in the palm of your hand, the tension is insufficient. Open the lever; turn the tension adjusting nut clockwise a quarter turn; then try again.

- (e) If the lever cannot be pushed all the way to a position parallel to the fork blade, return the lever to the OPEN position. Then turn the tension adjusting nut counterclockwise one-quarter turn and close the lever again.
- (f) Reattach the elbow cable guide to close the brake shoes; then spin the wheel to make sure that it is centred in the frame and clears the brake shoes.

**WARNING:** Secondary retention devices are not a substitute for correct quick-release adjustment. Failure to properly adjust the quick-release mechanism can cause the wheel to wobble or disengage, which could cause you to lose control and fall, which may result in serious injury.

### 7.7.5 Removing a Quick Release Rear Wheel

- (a) Standing on left side (in riding position), disconnect the rear brake.  
(See chapter 4).
- (b) Shift the rear derailleur to the outermost position. Pull the derailleur body back with your right hand. Rotate the quick release lever to the OPEN position. (Fig 7D).
- (c) Lift the rear wheel from the ground, and with the derailleur still pulled back, push the wheel forward and down until the wheel slides from the dropouts.

### 7.7.6 Installing a Quick Release Rear Wheel

- (a) Shift the rear derailleur to the high gear (smallest gear on rear wheel) then, pull the derailleur body back with your right hand. Rotate the lever to the OPEN position (Fig. 7D). The lever should be on the opposite side of the wheel to the derailleur and the wheel gears.
- (b) Put the chain on the top of the smallest gear. Then, insert the wheel into the dropouts of Lafree's frame until the wheel is aligned with the frame's seat tube and there is uniform clearance between the brake shoes.
- (c) Tighten the adjusting nut until it is finger tight against the frame dropout; then rotate the lever towards the front of the bike until it is parallel to the frame's seatstay tube and is curved toward the wheel (Fig. 7H).

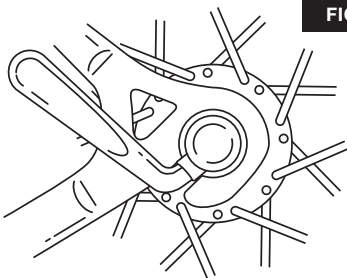


FIGURE 7H

Wheel in Rear Dropouts

**NOTE:** check the distance between the frame mounted speed sensor, and the wheel's magnet plate at this time. The recommended distance is 1-2mm.

Some models are equipped with internal gear hub. Removing and installing the rear wheel with internal gear hub requires special tools. Consult your dealer.

### 7.8 Seat Post Quick-Release

Lafree is equipped with a quick-release seat post binder for easy seat height adjustment for a variety of riders. The seat post quick-release binder works exactly like the wheel quick-release (Section 7.7). While a quick-release looks like a long bolt with a lever on one end and a nut on the other, the quick-release uses a cam action to firmly clamp the seat post (Fig. 4B).

**WARNING:** Riding with an improperly tightened seat post can allow the saddle to turn or move and cause you to lose control and fall. We advise that you:

1. Ask your dealer to show you how to correctly clamp your seat post.
2. Learn and apply the correct technique for clamping your seat post quick-release.
3. Check that the seat post is securely clamped before you attempt to ride your bike.

#### 7.8.1 Adjusting the quick-release mechanism

The action of the quick-release cam squeezes the seat collar around the seat post to hold the seat post securely in place. The amount of clamping force is controlled by the tension adjusting nut. Turning the tension adjusting nut clockwise while keeping the cam lever from rotating increases clamping force; turning it counterclockwise while keeping the cam lever from rotating reduces clamping force. Less than half a turn of the tension adjusting nut can make the difference between safe clamping force and unsafe clamping force.



**CAUTION:** Holding the nut with one hand and turning the lever like a wing nut until tight will not clamp the seat post safely. The full force of the cam action is needed to clamp the seat post securely.

## 7.9 Brakes

NOTE: For most effective braking, always apply both brakes simultaneously.

**WARNING:** Sudden or excessive application of the front brake may pitch the rider over the handlebar, which may cause serious injury.

### 7.9.1 How brakes work

It's important to your safety that you instinctively know which brake lever controls which brake on your bike. The braking action of a bicycle is a function of the friction between the brake surfaces - the brake shoes and the wheel rim on the front brake and internal brake shoes on the rear roller brake. To make sure that you have maximum friction available, keep your wheel rims and brake shoes clean and free of lubricants, waxes or polishes.

Brakes are designed to control your speed, not just to stop the bike. Try, as much as possible, to get used to the (strong) braking performance during your first ride.

Braking and traction forces change dramatically when riding on loose surfaces or in wet weather. Tyre adhesion is reduced, so the wheels have less cornering and braking traction and can lock up with less brake force. Moisture or dirt on the brake shoes can reduce their ability to slow and stop the wheel effectively. Riding more slowly will help you control the bicycle in wet or rough conditions.

### 7.9.2 Brake Actuated Motor Shut-Off

Lafree is equipped with a special safety feature that disengages the motor assist any time the brakes are applied. If you notice Lafree's power assisted pedals or VPC Throttle operating while the brakes are applied, take it to your authorised Lafree dealer immediately for service.

**WARNING:** Always run the Self Diagnostic test before every ride to ensure Brake Actuated Motor Shut-Off feature is operational. Riding Lafree with a non-operational Brake Actuated Motor Shut-Off could cause you to lose control and fall.

## 7.10 Changing Gears

The gear-changing mechanism on your bicycle consists of:

- Twist shifter on the left side of the handle bar
- Derailleur with sprocket or internal gear hub

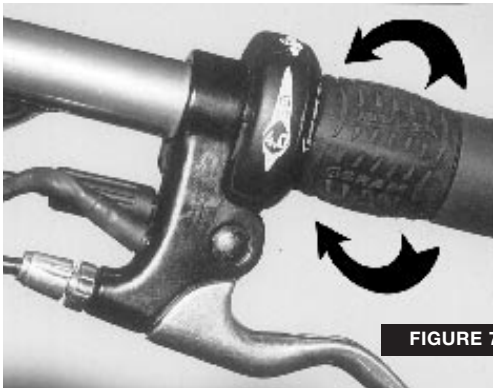
### 7.10.1 What the gears are for

Lafree's gearing is a simple yet effective way to help you fine tune your pedal revolutions, also known as cadence. Lafree's gearing is considered mid-range, meaning that it is designed for rolling, steep terrain. Lafree's power assisted pedals and VPC Throttle motor assist features are effective up to a maximum of 15 percent grade.

The more you ride, the more proficient you will become at shifting gears. You will get the greatest fitness benefit, produce the greatest sustained power and have the greatest endurance if you learn to spin the pedals at a high cadence with low pedal resistance. You will get the least fitness benefit and have the least endurance by pushing hard on the pedals against heavy resistance. At the same time, this could lead to knee pain and injuries. Lafree's power assisted pedals and VPC Throttle features assist your cadence by giving you a boost anytime the Energy Set is on and you are pedalling. However, you should still use the gears to get the most performance from your legs and motor assist. Pedalling in a harder gear will cause the power assisted pedals torque sensor to use more energy, which can drain the available energy stores more quickly.

### 7.10.2 shifting gears with derailleur

First and foremost, you must be pedalling forward to shift the drive chain from one gear to another.



**FIGURE 7I**

**CAUTION:** Never move the shifter while pedalling backward, nor pedal backward after having moved the shifter. This could jam the chain and cause serious damage to the bicycle, which could also cause you to lose control and fall.

Lafree is equipped with a specially designed twist shifter, located on the left side of the handlebar to the inside of the left grip. To shift the drive chain into a higher gear (smaller cog) and make pedal resistance harder, rotate the shifter to a higher number on the gear indicator. To shift the drive chain into a lower gear (larger cog) and make pedal resistance easier, rotate the shifter to a lower number on the gear indicator (Fig. 7I).

To best facilitate gear shifts, always shift gears before you are on a hill. Always scan the road or path for upcoming hills and be prepared to shift early, before the grade of the hill becomes too steep.

If pedalling becomes too difficult, engage VPC Throttle by twisting rearward/clockwise on the right-hand throttle grip while continuing to pedal forward, but without pressure to the pedals. While pedalling, rotate the left-hand twist shifter forward/counterclockwise to shift the drive chain into an easier gear. Once in an easier gear, disengage VPC Throttle by rotating the throttle forward/clockwise and resuming power assisted pedal by putting manual power to the pedals.

Whenever shifting gears, shift early, before pedal pressure becomes harder. Failure to

utilise this technique could cause damage to the drive chain and cogs.

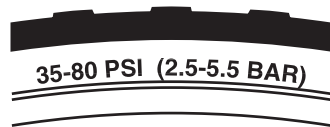
### 7.10.3 Shifting gears with internal gear hub

With gear hub you shift the same as with derailleur. Pedal along easily without putting pressure on the pedals. However, with gear hubs it is possible to shift while free wheeling or standing still. For proper performance make sure the VPC throttle is not engaged during shifting gears. Gear indication is the same as with derailleur: lower numbers for low speed, up hill and head wind, higher numbers for high speed, down hill and tail wind.

## 7.11 Tyres and Innertubes

### 7.11.1 Tyres

Lafree's tyres are general-purpose in design, made for improved (paved) road surfaces. They are not designed for unimproved roads or trails where dirt, loose rocks, or other loose debris is present. Your dealer can help you select new tyres once they warrant replacement.



**FIGURE 7J**



The size and pressure rating are marked on the sidewall of the tyre (Fig. 7J). The part of this information which is most important to you is tyre pressure.

The best way to inflate a bicycle tyre to the correct pressure is with a bicycle pump. Your dealer can help you select an appropriate pump.

### 7.11.2 Tyre Air Valves

Lafree tyres have French valves. To inflate a French valve tube, loosen the little centre nut a few turns. By pushing the centre nut downwards you can remove air from the tube. Make sure the pump matches the valve type. Contact your dealer if necessary.

## 7.12 Suspension

Some Lafree models are equipped with a front suspension fork. This suspension is designed to smooth out some of the bump forces associated with roads and paths. It is not designed to be used for jumping or other excessively abusive riding.

The suspension fork on Lafree is a closed unit, utilising a coil spring and elastomer bumper system. It is not designed to be user adjustable or serviceable. If, after riding Lafree for a given period, the front suspension seems to be working insufficiently, take your Lafree to an authorised Lafree dealer for inspection.

## 7.13 Rear fork lock

Operating the rear fork lock mechanism (Fig 7K): Push the lock pin slightly in the direction of the pin. Now rotate the pin through the wheel. Make sure not to touch the spokes. Click the pin firmly into the lock. Now you can remove the key. To open the lock, make sure the pin can rotate freely. Then, simply place and turn the key.



FIGURE 7K

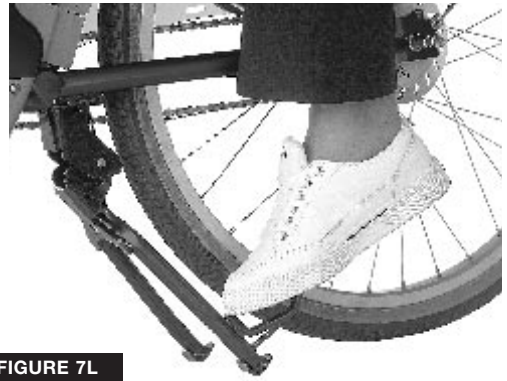


FIGURE 7L

## 7.14 Support Stand

Lafree is equipped with a retractable (spring loaded) support stand for parking and storage while not in use. It is extremely important that you always use the support stand when parking or storing Lafree.

Never lean Lafree against anything (wall, post, fence, etc.), or lay Lafree on it's side.

To park Lafree, step down on the support's stand toe. Guide the Lafree backwards while pressing the toe further down until the support locks (Fig 7L). To ride Lafree again, put your foot in front of the support stand and move the bike with care forward.

# 8

## SERVICE & MAINTENANCE

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**NOTE:** Technological advances have made bicycles and bicycle components more sophisticated than ever before, and the pace of innovation is increasing. This on-going evolution makes it impossible for this manual to provide all the information required to properly repair and/or maintain your bicycle. In order to help minimise the chances of an accident and possible injury, it is critical that you have any repair or maintenance which is not specifically described in this manual performed by your dealer.

Equally important is that your individual maintenance requirements will be determined by everything from your riding style to geographic location. Consult your dealer for help in determining your maintenance requirements.

The amount and kinds of maintenance you can do yourself depends on your level of skill and experience, and on whether you have the special tools required.

***WARNING: Many bicycle service and repair tasks require special knowledge and tools. Do not begin any adjustments or service on your bicycle if you have the slightest doubt about your ability to properly complete them. Improper adjustment or service may result in damage to the bicycle or in an accident which may cause serious injury.***

If you want to learn about service and repair work on your bike, you have two options:

1. Ask your dealer to recommend a book on bicycle repair.
2. Ask your dealer about the availability of bicycle repair courses in your area, or through the bike shop.

Regardless of which option you select, we recommend that the first time you work on something on your bike, ask your dealer to check the quality of your work before you attempt to ride the bike. There may be a small labour charge for this service.

### 8.1 Service & Maintenance Schedule

Some service and maintenance can and should be performed by the owner, and require no special tools or knowledge beyond what is presented in this manual.

The following are examples of the type of service you can perform yourself. All other service, maintenance and repair should be performed in a properly equipped facility by a qualified bicycle mechanic using the correct tools and procedures specified by the manufacturer.

1. Break-in Period: Your bike will last longer and work better if you break it in before riding it hard. Control cables and wheel spokes may stretch or “seat” when a new bike is first used and may require readjustment by your dealer. Your Mechanical Safety Check (Section 4.3) will help you identify some things that need readjustment. But even if everything seems fine to you, it’s best to take your bike back to the dealer for a check-up. Dealers suggest you to bring the bike in for a check-up after 30 days. Another way to judge when it’s time for the first check-up is to bring the bike in after about 10 to 15 hours of use. But if you think something is wrong with the bike, take it to your dealer before riding it again.
2. Before every ride: Mechanical Safety Check (see Section 4.3)
3. After every long or hard ride; if the bike has been exposed to water or grit; or at least every 150 kilometres: Clean the bike and lightly oil the chain, freewheel cogs and rear

derailleur pulley bushings. Wipe off excess oil. Lubrication is a function of climate. Talk to your dealer about the best lubricants and the recommended lubrication frequency for your area.

4. After every long / hard ride or after 10 to 20 hours of riding:

- Squeeze and hold the front brake and rock the bike forward and back. If you feel a clanking or looseness with each forward or backward movement of the bike, you may have a loose headset. Have your dealer check it. A small amount of play may be present from the suspension fork's overlapping slider mechanisms, which is normal. However, if you feel a significant amount of looseness or play, have your dealer check it immediately.
- Lift the front wheel off the ground and turn the handlebar to the left and to the right a few times. If you feel any binding or roughness in the steering, you may have a tight headset or the headset may need to have grease added to the ball bearings. Please ask your dealer to check it.
- Hold one pedal and rock it back and forth across the centreline of the bike; then do the same with the other pedal. If anything feels loose. Please ask your dealer to check it.
- Take a look at the brake shoes. If they're starting to look worn or are not hitting the wheel rim squarely, ask your dealer to adjust or replace them.
- Check the control cables and cable housings for any rust, kinks, or fraying. If you notice any of these problems or if your brakes and/or shifter are not functioning smoothly, ask your dealer to check and replace the cables and/or wires if necessary.
- Squeeze spokes in adjoining pairs on either side of each wheel between your thumb and index finger. They should all have about the same "tension." If any feel loose, have

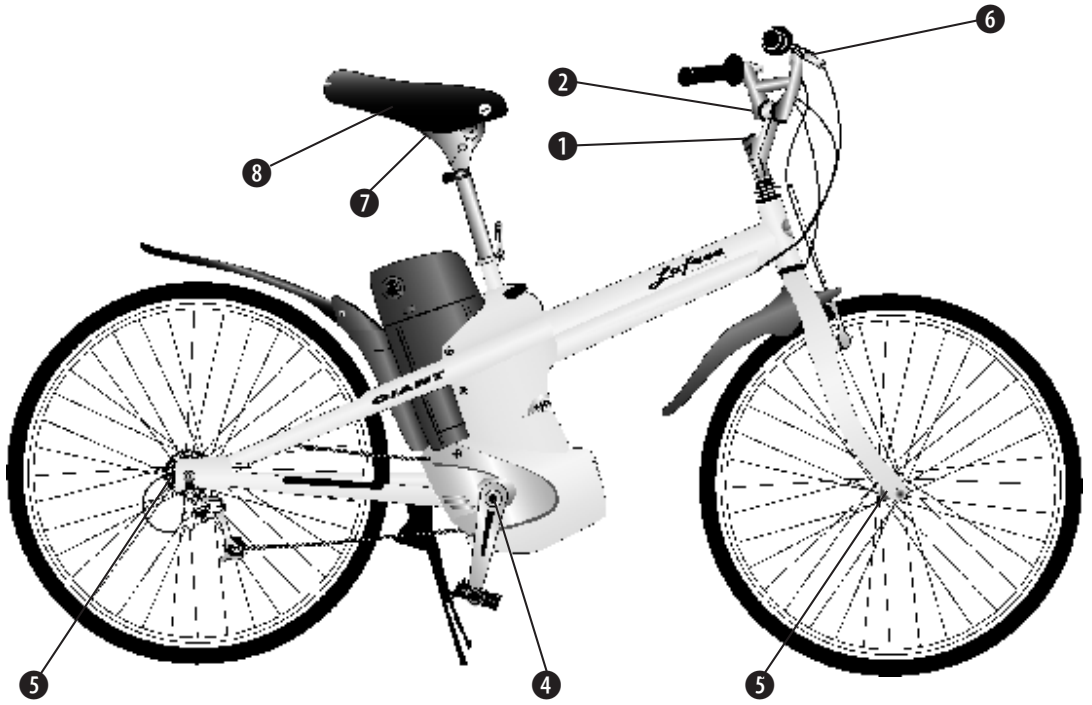
your dealer check the wheel for tension and trueness.

- Check the frame (particularly in the area around all weld joints), the handlebar, the stem and the seatpost for any deep scratches, cracks or discoloration. These are signs of stress-related fatigue and indicate that a part is at the end of its useful life and needs to be replaced.
- Check to make sure that all parts and accessories are still secure, and tighten any which are not.

5. As required: If either brake lever fails the Mechanical Safety Check (Section 4.3): restore brake lever travel by turning the brake cable adjusting barrel counterclockwise, then lock the adjustment in by turning the barrel's lock nut clockwise as far as it will go. If the lever still fails the Mechanical Safety Check, ask your dealer to check the brakes.

If the chain won't shift smoothly and quietly from gear to gear: the derailleur may be out of adjustment. The cause may be as simple as a stretched control wire, in which case you can compensate by rotating the shifter or derailleur cable adjusting barrel counterclockwise one turn. Try shifting again. If a full turn of the cable adjusting barrel does not cure the problem, see your dealer.

6. Every 50 hours of riding: Take your bike to your dealer for a check-up.



## 8.2 Torque Force Specifications

Assembly	Torque (Nm)
1. Handlebar stem bolt	20-30
2. Handlebar	20-30
3. Stem inclination bolt	20-30
4. Crank arm bolt	40-55
5. Wheel axle bolts (front and rear)	35-50
6. Brake lever bolts	6-10
7. Saddle retention bolt front	8-12
8. Saddle retention bolt rear	15-18

NOTE: The stem inclination bolt (3) is only used on bikes with adjustable handlebar stem.

You should never go for a bike ride without the following emergency equipment and knowledge:

- Allen wrenches (4, 5 and 6mm), used to tighten various clamping bolts that may loosen
- Patch kit and a spare inner tube
- Tyre levers
- Tyre pump or cartridge inflator with correct head to fit your tyre valves
- Identification (address, phone number, insurance company, emergency contact, blood type, medical allergies and conditions)

1. If you get a flat tyre: let all the air out of the innertube (Section 7.11). Remove one side of the tyre from the rim by inserting a tyre lever in between the rim and base of the tyre's sidewall ("bead"). Pry the bead away from the rim by pushing down on the tyre lever. Take another tyre lever and pry the bead off the rim approximately 10 to 15 centimetres away from where you started. A third lever may be needed, but at this point you should be able to begin levering the bead off the rim so that the entire circumference of one side of the tyre bead comes off the rim.

Remove the innertube by first removing the air valve from the rim's valve hole, then removing the innertube. Carefully check the outside and inside of the tyre for the cause of the puncture (thorn, glass shard, nail, etc.) and remove the object if it is still there. If the tyre is cut, line the inside of the tyre in the area of the cut with something that will resist the innertube forcing its way out of the cut once inflated—a spare patch, a piece of inner tube, a dollar bill, an energy bar wrapper, a piece of plastic milk carton, etc.

Either patch the tube (follow the instructions in your patch kit), or use a new innertube. (It is always a good idea to have a new innertube as well as a patch kit in case the innertube cannot be patched.) In case a new tire needs to be applied, the wheel needs to be disassembled.

Before replacing the new/repared innertube, put just enough air in to give it some shape. Starting with the air valve, install the innertube into the tyre. Then, starting at the valve, slip the exposed tyre bead into the rim using downward pressure. Make sure the bead seats down below the valve's thick rubber base. Next, push the tyre's bead down into the rim with your thumbs along either side of the circumference of the rim, not just one side. Make sure the innertube is not being pinched by the bead. If you have trouble getting the last few inches of bead over the edge of the rim with thumb pressure, use a tyre lever and be careful not to pinch the tube.

**CAUTION:** Do not use a screwdriver or any tool other than a tyre lever, as you are likely to pinch and puncture the innertube.

Check to make sure the tyre is evenly seated around both sides of the rim and that the innertube is inside the tyre beads. Push the valve stem into the tyre to make sure that its base is seated within the tyre's beads. Inflate the tube slowly to the optimum pressure, all the while checking to make sure that the tyre beads stay seated in the rim. Replace the valve cap. Replace the wheel in the bike (see Section 7.7).

**WARNING:** *Riding your Lafree with a flat or under-inflated tyre can seriously damage the rim, tyre, tube and bicycle, and can cause you to lose control and fall.*

2. If you break a spoke: A wheel with a loose or broken spoke is much weaker than a fully tensioned wheel. If you break a spoke while on a ride, you will have to ride much more slowly and carefully as the weakened wheel could experience additional broken spokes and become useless.

***WARNING: A broken spoke seriously weakens the wheel and may cause it to wobble, striking the brakes or the frame. Riding with a broken spoke(s) can cause you to lose control and fall.***

Twist the broken spoke around the spoke next to it to keep it from flopping around and getting caught between the wheel and the frame. Spin the wheel to see if the rim clears the brake shoes/frame. If the wheel will not turn because it is rubbing against the front brake shoe(s), try turning the brake cable adjusting barrel(s) clockwise to slacken the cable and open up the brakes (see Section 4.3.4). If the wheel still won't turn, open the brake's quick-release (see Section 7.7) and secure any loose cable as best you can. Walk the bike, or if you must, ride it with extreme caution. However, it is strongly recommended that you do not ride with only one functioning brake, and that you never ride with two non-operational brakes.

3. If you crash: First, check yourself for injuries. Seek medical help if necessary. If you

are involved with another vehicle, get as much information as possible from the involved party and any witnesses.

Next, check your bike for damage, and fix what you can.

When you get home, carefully perform the checks described in Section 7 and check for any other damaged parts. All bent, scored or discoloured parts are suspect and should be replaced.

***WARNING: A crash can put extraordinary stress on bicycle components, causing them to fatigue prematurely. Components suffering from stress fatigue can fail suddenly and catastrophically, which may cause loss of control or serious injury.***

**CAUTION:** If you have any doubt about the condition of the bicycle or any of its parts, take it to your dealer for a thorough check.

Checking the frame regularly and bringing any questionable marks to the attention of your Lafree dealer or other qualified person will prolong the safe use of your frame and components.

## 10 COMFORT & PERFORMANCE ACCESSORIES

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There is a wide range of accessories available for your bicycle. However, you shouldn't assume you can properly install and operate the accessories without first reading any instructions that are enclosed with the

product. Be sure to read, and understand, the instructions that accompany the accessories you purchase for your bicycle. If you have the slightest doubt as to your ability to install them correctly, ask your dealer for assistance.



### 11.1 About Your Dealer

Your dealer is here to help you properly service and maintain your Lafree electric bicycle, as well as help you select and understand any products and accessories you wish to examine and purchase. Your dealer has the knowledge, tools and experience to give you reliable advice and competent service. Your dealer carries the products of a variety of manufacturers so that you can have the choices which best meet your needs and your budget. If you have a problem with your bike or your riding, discuss it with your dealer.

### 11.2 Guarantee regulations of Lafree Europe (Lafree Europe is a division of Giant Europe B.V.)

1. The guarantee regulations of Lafree Europe (Lafree) are exclusively valid for the first owner (owner) of the Lafree bicycle. In case of a guarantee claim according to the guarantee regulations, the owner is obligated to bring forth the proof of purchase and/or the Lafree guarantee card.
2. The guarantee periods mentioned hereafter are always valid as of the purchase date of the Lafree bicycle (purchase date).
3. Lafree guarantees the owner of the Lafree bicycle that the frame and the non-spring front fork of the Lafree bicycle are free of material and/or construction defects for a period of 10 years.
4. Lafree guarantees the owner of the Lafree bicycle that the lacquer on the frame and the non-spring front fork is resistant to corrosion and will not peel-off for a period of 2 years.
5. Lafree guarantees the owner of the Lafree bicycle that the parts used in the bicycle of Lafree and Giant are free of material- and/or construction defects for a period of 1 year.
6. The original parts of other manufacturers applied to the Lafree bicycle will be guaranteed by Lafree according to the terms and conditions of the manufacturer of the mentioned parts. Lafree will keep the owner informed in regards to applicability, the terms, and the conditions upon request.
7. The only bicycles that will be taken into consideration for guarantee are those, that were bought at and approved by a Lafree dealer and that were assembled and made ready for riding by this dealer.
8. All guarantee claims need to be exclusively filed by an approved Lafree dealer.
9. If the Lafree bicycle displays any material- and/or construction defects that are mentioned in the guarantee within 60 days after the purchase date, the owner has a right to a repair free of charge and/or a replacement of the specific part. After the mentioned time-period expires, the owner has a right to a repair and/or a replacement of which the costs (transportation costs, labour costs, etc.) for repair are for the owner's account.
10. Lafree will continuously repair and/or replace the parts needing repair or replacement with at least an equivalent part. Lafree exclusively reviews the choice and model of the specific part.
11. Excluded from the guarantee are defects resulting from wearing away through normal usage, as well as defects resulting from accidents, eccentric use, respectively a usage for which the bicycle was not intended for.
12. The guarantee does not apply if the bicycle is not correctly assembled, repaired by someone other than an approved Lafree dealer, and/or if the bicycle has not been supplied with the original parts.
13. Lafree exclusively makes the decision whether or not the guarantee applies.