



Bicycle Owner's Manual

For E-Bike Models



WARNING

This manual contains important safety, performance and service information. Read it before you take the first ride on your new bicycle, and keep it for reference.

Safety Messages

In this manual, particularly important information is presented in the following ways:

WARNING

Indicates a hazardous situation which, if not avoided, may result in death or serious injury.

CAUTION

Indicates special precautions that must be taken to avoid damage.

Bicycles Cannot Protect You

Bicycles are lightweight, human-powered vehicles, even Ebikes. Unlike a car, much like a motorcycle, there is no restraint system for your body, no protective structure around your body. Crash worthiness cannot be a design criterion. A rider sits on a bicycle and can be easily thrown off for many reasons including overly hard use of the front brakes or striking an obstacle.

Like any sport, bicycling involves risk of injury and damage. By choosing to ride a bicycle, you assume the responsibility for that risk, so you need to know — and to practice — the rules of safe and responsible riding and of proper use and maintenance. Proper use and maintenance of your bicycle reduces risk of injury.

Many of the Warnings and Cautions say, “You may lose control and fall”. Because any fall can result in serious injury or even death, we do not always repeat the warning of possible injury or death.

Because it is impossible to anticipate every situation or condition that can occur while riding, this Manual makes no representation about the safe use of the bicycle under all conditions. There are risks associated with the use of any bicycle which cannot be predicted or avoided, and which are the sole responsibility of the rider.

About This Owner's Manual

This manual meets EN ISO-4210 and 16 CFR 1512 Standards

In case of a conflict between the instructions in this manual and information provided by a component manufacturer, always follow the component manufacturer's instructions.

If you have any questions or do not understand something, take responsibility for your safety and consult with a bicycle dealer or the bicycle's manufacturer.

NOTE: This manual is not intended as a comprehensive use, service, repair or maintenance manual. Please see a bicycle dealer or professional bicycle mechanic for all service, repairs or maintenance not covered in this manual.

Bicycle Dealers and professional bicycle mechanics may also be able to refer you to classes, clinics or books on bicycle use, service, repair or maintenance.

Component and Accessory Manuals

Additional safety, performance and service information for specific components such as suspension or pedals, fenders, lighting on your bicycle, or for accessories such as helmets or lights that you purchase, may also be available. Make sure you read and follow all the manufacturers' literature that was included with your bicycle or accessories.

Drive System Manufacturer Manuals

WARNING

Manufacturers' instructions contain important operations, service and maintenance information.

In addition to this manual, you must read and follow the manufacturers' instructions for all components of the drive-assist system:

- **Drive Unit**
- **Drive Controller**
- **Drive Battery**
- **Drive Battery Charger**

Download links to this manual and applicable manufacturers' drive system manuals or product websites are available via the Support section of our website: www.chargebikes.com.

Contents

Bike Models

Charge City	6
Charge Comfort	8
Charge XC	10
Frame Labels	12
Purchase Record	13

Important Safety Information

A Special Note for Parents	14
Restricting Use of the Bike	15
Bicycles Have Sharp Surfaces	15
Cancer Risk	15
Teaching Your Child the Rules	16
Intended Use of the Bike	19
Understanding E-bikes	20
E-bike Operation	21
Follow Laws & Regulations	22
Your Insurance Policies	13
Batteries and Chargers	23
Drive System Maintenance	25
No Modifications	26
Kickstands	27
Trailers	27
Racks	27
Foreign Objects	29

Riding Safety

Required Safety Devices	30
Bicycling Inherent Risk	30
Always Wear a Helmet	31
23 Safety Points	32
What to Know Before	
Your First Ride	34
Riding Off-Road	35
Off Road Respect	36
About Bicycle Suspension	36
Stay In Control	36
Wet Weather Riding	36
Jumping	37
Mountain Bikes & Maintenance	37
Bicycle Reflectors	37
Riding at Night, Dusk, and Dawn	38
Bicycle Lights	40
Riding in Traffic/Commuting	41

Adjustment (Fit) Instructions

Stand Over Height	42
Saddle Height	43
Saddle Front to Back Adjustment	46
Saddle Angle Adjustment	46
Handlebar Height and Angle	47
Handlebar Control Positions	48
Folding Stem Instructions	49
Changing the Handlebar Position	50
Adjusting the Folding	
Stem Lever Tension	52

Technical Information

About Wheels	54
Charge City/Comfort Front Wheel Removal	.57
Charge City/Comfort Front Wheel Installation	58
Charge City/Comfort Rear Wheel Removal/Installation	59
 Charge XC Front Wheel Removal	60
Charge XC Front Wheel Installation	.61
Charge XC Rear Wheel Removal/Installation	62
 Brakes	63
About Seat Posts	67
Shifting Gears	69
About Pedals	.72
About Bicycle Suspension	.75
About Tires and Tubes	.76
About Changing Adding Accessories	.81
About Using Bicycle Racks	82
Water Bottles	83

Inspect for Safety

Nothing Last Forever, Including Your Bike	85
Understanding Metals	.87
Understanding Composites	.91
Understanding Bicycle Component Inspection	94

Maintenance

Basics of a Good Maintenance Schedule	98
Cleaning Your Bike	100
Importance of Lubrication	100
Bicycle Repair/Work stands	101
Tightening Torques	102

Limited One-Year Warranty . . . 109

FCC Part 15 Compliance. . . . 105

Pre-Ride Checklist 106

E-Bike Models

Charge City

Parts



Identification

- | | | | |
|----------------------|--------------------------|-------------------------|-------------------------|
| 1. Drive Unit | 9. Light, Rear | 18. Rear, Rack | 26. Lever, Brake, Front |
| 2. Battery, External | 10. Kickstand | 19. Derailleur, Rear | |
| 3. Charge Port | 11. Seat Post | 20. Chain | |
| 4. Drive Display | 12. Seat Clamp | 21. Pedal | |
| 5. Throttle | 13. Fork, Rigid | 22. Brake Rotor | |
| 6. Stem | 14. Shifter, Twist, Rear | 23. Frame Serial Number | |
| 7. Saddle | 15. Brake Rotor | 24. Tire Valve | |
| 8. Light, Front | 16. Fender, Front | 25. Lever, Brake, Rear | |
| | 17. Fender, Rear | | |

Specifications

Item	Specification
Intended Use	ASTM CONDITION 2, General Purpose Riding
Frame	6061 Aluminium
Fork	1 1/8 Cromoly fork
Front Wheel	700c alloy, 32 hole double wall rim, w/alloy loose ball bearing hub
Rear Wheel	700c alloy, 32 hole double wall rim, with Bafang Hub Drive Motor
Tires	Goodyear Transit Tour 700×40 puncture resistant with reflective sidewalls.
Pedals	Fiberglass reinforced folding Nylon pedal. 9/16.
Crank	Alloy 38 teeth (Length: 170mm on size S/M, 175mm on size L/XL)
Chain	KMC 7 speed
Gearing	7 speed with 14 - 34 tooth range.
Rear Derailleur	Shimano Altus 7 speed
Shifter	Shimano Tourney 7 speed shifter with optical gear display
Handlebar	Lightweight 6061 Aluminium with 60mm rise t 31.8 mm dia.
Grips	Charge Comfort Ergo Soft Rubber Grip
Stem	TransX 90 degree rotateable stem with +7 degree rise, 80 mm length, 31.8 mm clamp
Brakes	Promax cable actuated disc brakes with 160mm rotors front and rear
Saddle	Ergonomic Charge Comfort Saddle. Length: 145mm
Seatpost	6061 Aluminium. 30.9×350, 0 mm offset.
Rack	Integrated Rear Rack
Fenders	Lightweight and stainless steel, front and rear full coverage fenders
Kickstand	Alloy center mount with height adjustable foot
Extras	Tire Pressure Indicator Valve Caps
Battery	418WH Removable Rechargeable Li Ion Battery. Samsung 29E cells.
Charger	2 Amp Battery Charger : p/n K740001
Controller	250W ON/OFF Switch. Assist Up and Down buttons.
Display	Intelligent battery capacity indication, Real Time Speed Indication, Power Assist Level indication
Motor	250W Bafang Hub Drive Motor. 45 Nm of (drive) torque.
Lights	Spanninga LED Rear Light, and LED Front Light with integrated horn.
Pedal Assist	5 Support Modes
Throttle	Yes

Charge Comfort

Parts



Identification

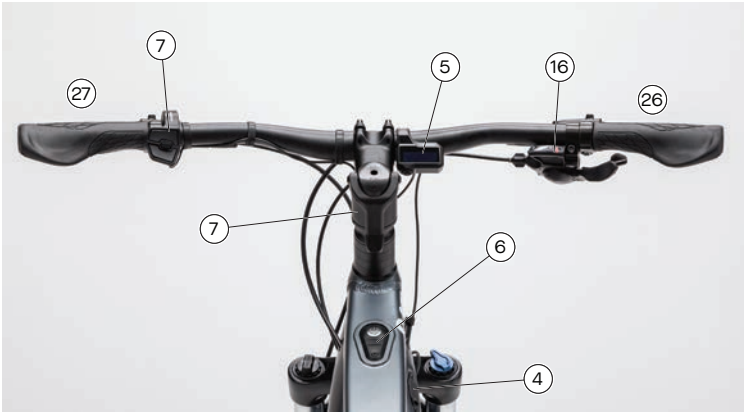
- | | | | |
|------------------|----------------------|-------------------------|-----------------|
| 1. Drive Unit | 9. Light, Rear | 17. Chain | 24. Chain Guard |
| 2. Battery, Rack | 10. Kickstand | 18. Pedal | |
| 3. Charge Port | 11. Seat Post | 19. Brake Disc, Front | |
| 4. Drive Display | 12. Seat Clamp | 20. Frame Serial Number | |
| 5. Throttle | 13. Fork, Suspension | 21. Tire Valve | |
| 6. Stem | 14. Shifter, Rear | 22. Lever, Brake, Rear | |
| 7. Saddle | 15. Rear, Rack | 23. Lever, Brake, Front | |
| 8. Light, Front | 16. Derailleur, Rear | | |

Specifications

Intended Use	ASTM CONDITION 2, General Purpose Riding
Frame	6061 Aluminium
Fork	1 1/8 Cromoly fork
Front Wheel	700c alloy, 32 hole double wall rim, with alloy loose ball bearing hub
Rear Wheel	700c alloy, 32 hole double wall rim, with Bafang Hub Drive Motor
Tires	Goodyear Transit Tour 700×40 puncture resistant with reflective sidewalls.
Pedals	Fiberglass reinforced folding Nylon pedal. 9/16.
Crank	Alloy 38 teeth. Length: 170mm
Chain	KMC 7 speed
Gearing	7 speed. 14 - 34 tooth range.
Rear Derailleur	Shimano Altus 7 speed
Shifter	Shimano Tourney 7 speed shifter with optical gear display
Handlebar	Lightweight 6061 Aluminium with 60 mm rise 31.8 mm.
Grips	Charge Comfort Ergo Soft Rubber Grip
Stem	TransX 90 degree rotateable stem with +7 degree rise, 80 mm length, 31.8 clamp
Brakes	Promax cable actuated disc brakes with 160mm rotors front and rear
Saddle	Ergonomic Charge Comfort+ Saddle. Length: 155mm
Seatpost	Lightweight and durable 6061 Aluminium. 30.9×350, 0mm offset.
Rack	Integrated Rear Rack
Fenders	Lightweight and stainless steel, front and rear full coverage fenders
Kickstand	Alloy center mount with height adjustable foot
Extras	Tire Pressure Indicator Valve Caps
Battery	418WH Removable Rechargeable Li Ion Battery. Uses Samsung 29E cells.
Charger	2 Amp Battery Charger : p/n K740001
Controller	250W ON/OFF Switch. Assist Up and Down buttons.
Display	Intelligent battery capacity indication, Real Time Speed Indication, Power Assist Level indication
Motor	250W Bafang Hub Drive Motor. 45 Nm of (drive) torque.
Lights	Spanninga LED Rear Light, and LED Front Light w integrated horn.
Pedal Assist	5 Support Modes
Throttle	Yes

Charge XC

Parts



Identification

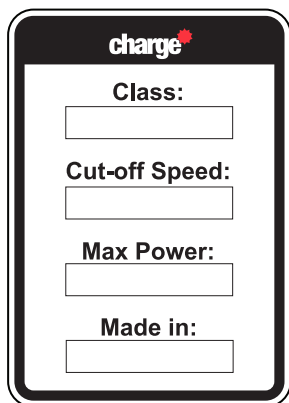
- | | | | |
|----------------------|----------------------|-------------------------|--------------------------|
| 1. Drive Unit | 9. Saddle | 17. Fender, Front | 25. Tire Valve |
| 2. Battery, Internal | 10. Light, Front | 18. Fender, Rear | 26. Lever, Brake, Rear |
| 3. Battery, Door | 11. Light, Rear | 19. Rear, Rack | 27. Lever, Brake, Front |
| 4. Charge Port | 12. Kickstand | 20. Derailleur, Rear | 28. Brake Caliper, Front |
| 5. Drive Display | 13. Seat Post | 21. Chain | 29. Rear Cassette |
| 6. Power Button | 14. Seat Clamp | 22. Pedal | |
| 7. Assist Control | 15. Fork, Suspension | 23. Brake Disc | |
| 8. Stem | 16. Shifter, Rear | 24. Frame Serial Number | |

Specifications

Intended Use	ASTM CONDITION 2, General Purpose Riding
Frame	6061 Aluminium. Tapered 1.5" 1 1/8" headtube
Fork	SR Suntour XCM 34, 100mm coil fork with preload adjuster
Front Wheel	WTB 29", 32 hole double wall rim, with Shimano MT400 thru axle hub (15mm)
Rear Wheel	WTB 29", 32 hole double wall rim, with Shimano MT400 8-11 speed thru axle hub (15mm)
Tires	Goodyear Peak 29×2.25 puncture resistant with reflective sidewalls.
Pedals	Fiberglass reinforced folding Nylon pedal. 9/16.
Crank	Shimano E5010 36 teeth with alloy guard (Length: 165MM)
Chain	KMC 8 speed.
Gearing	8 speed. 11- 34 tooth range.
Rear Derailleur	Shimano Altus 8 speed
Shifter	Shimano Rapidfire Plus 8 speed with optical gear display
Handlebar	Lightweight 6061 Aluminium with 60mm rise to provide heads up, confident handling. 31.8.
Grips	Charge Comfort Ergo Soft Rubber Grip
Stem	TransX 90 degree rotateable stem with +7 degree rise, 80mm length, 31.8 clamp
Brakes	Shimano MT200 Hydraulic disc brakes with 180mm rotors
Saddle	Ergonomic Charge Comfort Saddle. Length: 145mm
Seatpost	Lightweight and durable 6061 Aluminium. 30.9×350, 0mm offset.
Rack	Integrated Rear Rack
Fenders	Lightweight and stainless steel, front and rear full coverage fenders
Kickstand	Dropout mounted
Extras	Tire Pressure Indicator Valve Caps
Battery	Shimano E8035 504WH Integrated Battery with ABUS Lock
Charger	Shimano 2 Amp E6002 Smart Charger
Controller	Shimano E7000. Ergonomic, adjustable layout. Superb fingertip shifting of support settings
Display	Shimano E7000 Cycle Computer
Motor	Shimano E5000 250W
Lights	Spanninga LED Rear Light, and LED Front Light integrated horn.
Pedal Assist	3 support modes plus Power Walk Assist
Throttle	No

Frame Labels

The labels below are located on the bicycle frame. These labels contain important information. Do not remove them.



A rectangular label with a black border and a black background. At the top left is the "charge" logo in white with a red flower icon. Below it are four white rectangular boxes, each preceded by a label in white text: "Class:", "Cut-off Speed:", "Max Power:", and "Made in:".



A rectangular label with a blue border and a white background. At the top is a yellow banner with a black triangle icon and the word "WARNING" in black. Below this, the text reads: "To REDUCE the risk of SERIOUS or FATAL INJURY". This is followed by three bullet points: "• ALWAYS WEAR a helmet.", "• INSPECT your bike for damage BEFORE each ride and AFTER any crash or impact. (See 'Inspect For Safety' section in your owner's manual)", and "• READ and FOLLOW the owner's manual, website and videos before riding." Below the bullet points, it says: "For more information, see a bicycle dealer, call us at 1-833-482-3822 or go to www.chargebikes.com". At the bottom, it says "Meets or exceeds CPSC-1512". On the right side, there is a vertical number "206050".

Class - E-bikes in the US are defined under different classes (i.e CLASS 1, CLASS 2, CLASS 3). The class number of the bike influences where and under what conditions it is legal to operate. Authorities can require that the label be displayed on the bike before it can be ridden in a regulated area. If the label is not present, you may not be permitted to ride in the area, even if the area is open to the Class.

Cut-Off Speed - When the bicycle speed exceeds the cut-off-speed (in miles-per-hour) the drive system will stop providing assistance. Assistance will resume when the bicycle speed drops below the cut-off speed

Max Power - This is the maximum power (in watts) the drive system delivers.

Made in - The country where the bicycle was manufactured

This is the frame warning label. It contains safety information to anyone who rides the bike. It also contains contact information.

Purchase Record

Fill in immediately and retain as a record of your purchase. Please retain your sales receipt for any possible warranty claims.

Your Name:

Address:

City/State:

Date Purchased:

Place of Purchase:

Model Information:

Wheel Size:

Model Number:

Date Code:

Frame Serial Number:

Battery Key Serial Number:

Important Safety Information

Disregarding or misunderstanding of the any safety warnings, the safety warnings in the manuals associated with the e-bike parts, and safety labels on the e-bike could result in serious injury or death.

Anyone assembling, using, maintaining, transporting or storing this e-bike must read, understand, and follow these safety warnings before performing any of the actions stated.

**If you have any questions regarding the safety warnings and labels call
Charge Customer Service at 833-482-3822**

A Special Note For Parents

As a parent or guardian, you are responsible for the activities and safety of your minor child, and that includes making sure that the bicycle is properly fitted to the child; that it is in good repair and safe operating condition; that you and your child have learned and understand the safe operation of the bicycle; and that you and your child have learned, understand and obey not only the applicable local motor vehicle, bicycle and traffic laws, but also the common sense rules of safe and responsible bicycling.

As a parent, you should read this manual, as well as review its warnings and the bicycle's functions and operating procedures with your child, before letting your child ride the bicycle.

WARNING

Make sure that your child always wears an approved bicycle helmet when riding; but also make sure that your child understands that a bicycle helmet is for bicycling only, and must be removed when not riding. A helmet must not be worn while playing, in play areas, on playground equipment, while climbing trees, or at any time while not riding a bicycle.

Failure to follow this warning could result in serious injury or death.

(continued on the next page...)

Restricting Use of the Bike

WARNINGS

Use of this e-bike by persons (including children) with reduced physical, sensory or mental capabilities or persons lacking experience and knowledge in the use of the e-bike could result in serious injury or death.

The owner of this e-bike must ensure this product is not used by people with the conditions described above. Always follow the rules, regulations and laws (including age limits) related to the use of an e-bike in its area of use.

A child may not realize or understand the e-bike has moving parts and components (e.g. battery). Never allow children to play or come into contact with the e-bike or its parts. Always follow all rules, regulations and laws regarding age limits and operation in the e-bike area of use.

WARNING

See also, “Teaching Your Child the Rules ” in this owners manual.

Bicycles Have Sharp Surfaces

WARNING

Bicycles have exposed sharp surfaces. Exercise caution with chainrings and pointed, aggressive platform pedals, as they have sharp and potentially dangerous surfaces. Use caution when working on your bike. If you slip or fall you could be injured.

Cancer Risk

WARNINGS

This product can expose you to chemicals including lead, which is known to the State of California to cause cancer and birth defects or other reproductive harm.

For more information go to www.P65Warnings.ca.gov

Teaching Your Child the Rules

We cannot over-state how import this entire owner's manual is to the rider's safety.

We also understand Kids need to be taught ... and to have frequently reinforced ... the following rules and lessons which adults are already expected to know.

We urge you to take the time to familiarize yourself with this owner's manual and the rules in this section.

Teach the rules to your child before you let your child ride unsupervised.

1. Rules

- No playing in the road or in the street.
- No riding on busy streets.
- No riding at dawn, dusk or at night.
- Stop for all STOP signs.
- Ride on the right of traffic.

2. Lessons

The lessons that follow relate to some of the most common real situations that children encounter when riding their bikes. Go over these situations with your child and make sure the lesson objective is accomplished.

a. Driveway Ride out

When a youngster rides out of the driveway and is struck by a car, that is called a ride out accident.

What can you do? First, realize the danger of your own driveway. If there are obstructions to the view of passing motorists (like bushes or trees), trim them back. You might park your car in front of the driveway, if local ordinance permits. This way, your child can't use the driveway as a launching pad. But the most important thing you can do is teach your child about driveway safety. Take your child outside to the driveway and have him/her practice the following steps:

- 1) Stop before entering the street.
- 2) Look left, right and left again for traffic.
- 3) If there's no traffic, proceed into the roadway.

b. Running a Stop Sign

Car/bike crashes can happen when a cyclist runs a stop sign. Most cyclists who get hit riding through stop signs know that they were supposed to stop. They just thought it would be OK this time; or they may have been distracted. The thing to impress upon your child is that while he/she may not get hit every time, running stop signs will eventually result in an accident.

What can you do? Take your child to a stop sign near home. Explain what it means by emphasizing the following points:

- 1) Stop at all stop signs, regardless of what is happening.
- 2) Look in all directions for traffic.
- 3) Watch for oncoming cars making left turns.
- 4) Watch for cars behind you making right turns.
- 5) Wait for any cross traffic to clear.
- 6) Proceed when safe.

In order to make this lesson stick, you may have to change your own driving habits. If you creep through intersections controlled by stop signs, you are showing your child that you don't really believe what you preach. For your child's sake, stop at stop signs.

c. Turning Without Warning

Another major accident type involves cyclists who make unexpected left turns. They neither look behind for traffic, nor do they signal. The key factor here is neglecting to look to the rear. If the cyclist had looked, he/she would have seen the danger coming up from behind.

What can you do? Of course, you ought to teach your child not to ride across busy streets - at least until the child has had some advanced training and is old enough to understand traffic. But in the meantime, for residential street riding, you can teach your child to always look and signal before turning left. A big part of this lesson is teaching the child how to look to the rear without swerving.

Take your child to a safe area away from traffic or obstructions to practice riding along a straight line while looking behind. Stand alongside and hold up a different number of fingers on your hand after the child rides by. Call his/her name. After 15 minutes of practice, a ten year old should be able to look behind his/herself and identify how many fingers you are holding up - without swerving.

d. Riding at Dawn, at Dusk or at Night

Most car/bicycle accidents happen at night where an overtaking car hits a bike. (An overtaking car is one that comes up from behind and passes the cyclist on the left.) These overtaking accidents can be very serious.

What can you do? First, you should keep your child from riding at dawn, dusk or at night. It requires special skills and equipment.

Few children have either. Secondly, make sure your child understands that if he/she gets caught out at dusk or after dark on a bike, the thing to do is to call you for a ride home. One suggestion is to have your child carry a cell phone, and as an added precaution, tape a phone number to the bike so that, in an emergency, an adult will be able to call home.

e. Following the Leader

There is increased risk of car/bike collision if children are following each other, because if the first one does something dangerous, those following may do it too.

What can you do? Teach your child to always assess the traffic situation for him/herself. When riding cyclists are riding in a group, each cyclist should stop for stop signs; each cyclist should look to the rear before making left turns; and so on. One way to get the message across is to play a game with the child similar to 'Simon Says'. In this game, however, the emphasis should not be on doing what 'Simon Says', but rather have the child make a decision based on the situation. The child should learn to ignore what 'Simon Says'. Children need to learn to think for themselves to ride safely.

Summary

Teach your child early - the earlier the better. Learning skills such as looking and avoiding hazards takes time. Be prepared to repeat lessons until your child understands what you're trying to get across. Be patient. Your efforts will be rewarded, knowing that your child is aware of safe riding skills.

Intended Use of the Bike

The intended use of Charge City, Comfort, and XC models is ASTM CONDITION 2. A description of the standard is described in the following table:

	Condition 2, General Purpose Riding
	Bikes designed for riding Condition 1, plus smooth gravel roads and improved trails with moderate grades where the tires do not lose ground contact. MAXIMUM WEIGHT LIMIT: Rider: 300 lbs /136 kg , Luggage: 30 lbs/ 14 kg, Total 330 lbs/ 1250 kg. Touring Trekking Bikes: Rider: 300 lbs /136 kg , Luggage: 55 lbs/ 25 kg, Total 355 lbs/ 161 kg
INTENDED For paved roads, gravel or dirt roads that are in good condition, and bike paths.	
NOT INTENDED For off-road or mountain bike use, or for any kind of jumping. Some of these bikes have suspension features, but these features are designed to add comfort, not off-road capability. Some come with relatively wide tires that are well suited to gravel or dirt paths. Some come with relatively narrow tires that are best suited to faster riding on pavement. If you ride on gravel or dirt paths, carry heavier loads or want more tire durability talk to your dealer about wider tires.	

 WARNING

Understand your bike and its intended use. Choosing the wrong bicycle for your purpose can be hazardous. Using your bike the wrong way is dangerous.

Refer to the drive assist system manufacturer's manual for instructions regarding all the components of the drive assist system (e.g. Battery, Drive Charger, Display/e-bike Computer). Always follow the manufacturer's instructions for intended use and limitations.

Understanding E-bikes

What is an E-bike?

Electric bikes, also known as “E-Bikes” are bicycles equipped with an electric pedal assist drive system. An E-Bike IS NOT a moped or motorcycle. E-bikes share components common with pedal-only bikes.

What is a Drive System?

The drive-assist system consists of a drive unit, a battery, a computer control, and various electronic components (harness wires, sensors, and switches). There are many different drive-assist systems for differing uses and bike types. Likewise there are various drive-assist system manufacturers (Shimano, BOSCH, Bafang, Yamaha, etc.)

How does the Drive System work?

A Drive System can be throttle based, pedal assist based, or both.

Throttle Controlled Drive

For a drive system equipped with a throttle, it is important to know that when the drive-assist system is turned ON, the drive unit engages to provide power when the throttle is pressed.

Pedal Assisted Drive

For a drive system that is pedal assist only, It is important to know that when the drive-assist system is turned ON, the drive unit engages to provide power only while you are pedaling. The amount of power provided by the drive unit depends on your pedaling force and the assistance mode/level you set with the handlebar control unit. With a pedal-assist system, if you stop pedaling, the drive-assist will disengage.

Limit Assistance / Maximum Speed Allowable

The drive-assist system power reduces progressively and cuts off as the bike reaches a the maximum allowable speed. The drive-assist re-engages when speed drops below the maximum allowable speed as long as the pedals are turning. Whenever the drive-assist system is turned OFF, you can pedal the bike normally. The drive system will not engage.

E-bike Operation



WARNINGS

Operating the Drive Assist System

Turning the drive assist system ON before you are seated and have both hands on the handlebar could result in loss of control of the E-bike. Always have total control of the E-bike and be ready to ride before engaging the drive system.

The E-bike's drive assist system will increase or decrease the acceleration of the bike. It is the rider's responsibility to appropriately judge the riding conditions (e.g. road conditions, tight turns) and current speed of the E-bike before adjusting the drive assist system.

Anticipating changes in speed and providing time to react appropriately is critical to using the drive assist system. Always check your surroundings and conditions before accelerating and set the assistance level to lowest assist, or off, when descending hills.

The drive assist system will not function properly without the display (E-bike computer) properly attached to the base. If the display (E-bike computer) becomes disconnected from the base during a ride, the speed of the E-bike will change. Unexpected deceleration may impact your riding conditions and other vehicles near you. Always be prepared to pull off to a safe area in case the display (E-bike computer) becomes disconnected from the base.

Importance of practice & rider training

Before you ride this bike, practice riding in a safe area free from hazards. Take time to learn to bike's controls and performance. Practice the controls and gain the experience necessary to avoid the many hazards you will encounter while riding.

Riding Enviroments

Improper use of the drive assist system may result in riding at unsafe speeds and cause accidents resulting in serious injury or death. Do not accelerate using the drive assist system in situations where there is a possibility of causing harm to people, animals, or property. Always maintain control of the E-bike and operate at a safe speed.

Riding the E-bike through water could result in loss of control and damage to the drive assist system. Do not ride into, or attempt to ride through, water or sub-merge any part of the E-bike.

The E-bike is heavier than ordinary bikes and may result in tip-over, serious injury, or death if not parked properly. Always park the E-bike in a safe area away from children, animals, and property (e.g. vehicles). Always park the E-bike on a level surface so it cannot tip over.

Follow Laws & Regulations

See also, [Bike Model Specifics](#), "Frame Labels."

WARNING

You must obey all local laws & regulatory requirements - it is your responsibility to identify and follow all local laws and regulations necessary for legal compliance. Compliance with local regulation is critical to the safety of a rider and others where the bike is used.

Here are some important specifications related to compliance with local laws:

Vehicle class - a definition (California, usa) of the different types of e-bikes, e-bike labeling and legal use areas, including any required additional equipment, registration, and applicable rider age restrictions.

Vehicle category - a definition of the european union of the different types of e-bikes, who and where they may be used, necessary additional equipment such as lighting and signaling devices as well as any necessary insurance and licensing.

Minimum operator age - a minimum age requirement for a rider of the e-bike. This restriction as well as speed and additional equipment requirements (light, helmets, license plates, signal lamps, etc.)

Follow any state or local laws for any minimum age restrictions for e-bikes in your area.

Your Insurance Policies

Your insurance policies (e.g. liability, property and injury) may not provide coverage for accidents involving the use of this E-bike. To determine if coverage is provided you should contact your insurance company or agent.

Batteries & Chargers



WARNINGS

Failure to observe the following warnings could result in electrical fires, explosion, severe burns or electrocution.

The battery and battery charger contain hazardous materials. Always keep the battery and battery charger away from children, animals, or persons incapable of understanding the potential hazards.

The battery and battery charger contain no serviceable parts.

Do not open, disassemble, or modify the battery or charger.

Improper handling of the battery and battery charger may result in electrical fires, explosion, severe burns or electrocution.

Do not move the battery or battery charger during charging

Do not hold the battery charger during a thunder or lightning storm

Do not plug or unplug the battery charger with wet hands

Do not place any items on the battery charger, or cover ventilation.

Do not place the battery charger in any wet or damp location.

Overcharging the battery could result in electrical fires, explosion, or severe burns. Always disconnect the battery from the battery charger when the battery is fully charged. Unplug the battery charger from the wall outlet when not in use.

A damaged battery or battery charger (e.g. cable, plug or housing) may result in leakage of hazardous materials or be a potential source of sparking and fire. Always examine the battery and battery charger before each use. Never charge a damaged battery or use a damaged battery charger.

Battery/Charger Compatibility

Charging the battery with an incompatible battery charger may result in electrical fires, explosion, severe burns or electrocution. Only charge the battery using the battery charger that came with your bike, or one specified by the manufacturer's instructions. Never use the battery charger to charge any other batteries.

(continued on next page...)

 WARNINGS**Charging Environment**

Locate both the battery and battery charger indoors, in a clean, dry area with good ventilation to charge. Always place the battery and battery charger on an even surface. Ensure the area is free from dust, moisture, combustibles and keep the battery charger ventilation openings unobstructed. If applicable, always turn the power switch on the battery OFF before attaching.

Contact between the battery contacts and metal objects such as paper clips, coins, keys, nails, screws or other metal items could result in shorting out the battery and cause electrical fires, explosion, or severe burns.

Transportation

The battery is subject to hazardous materials regulations when in transit. Always contact the proper authorities regarding the requirements to transport the battery. Do not transport the battery without insulating the battery contacts, properly packaging the battery, applying required safety labels, and use of an authorized shipping container. Never transport a damaged battery.

The battery must be removed from the e-bike before transporting the bike on an aircraft. Always contact the air carrier for specific requirements.

Disposal

The battery and battery charger contain regulated materials and must be disposed/discarded in accordance with national and/or local laws. Do not discard the battery and battery charger into fire, water or ordinary household waste/garbage. Always dispose the battery and battery charger at an approved waste facility/recycler.

Storage

Unexpected activation of the drive assist system could result in serious injury or death. Always turn OFF the drive assist system, remove the key, and remove the battery from the e-bike when storing the bike. Place the parts in a secure location.

Overheating of the battery could result in electrical fires or explosion. Always store the battery and battery charger in a well-ventilated area at moderate temperatures.

Drive System Maintenance



WARNINGS

There are no user serviceable elements incorporated into the motor, motor controller, battery, battery charger, throttle, or wiring harness of your e-bicycle. DO NOT ATTEMPT TO DISASSEMBLE OR ADJUST ANY OF THESE COMPONENTS. Doing so may cause extensive damage to these components, will void your warranty, and may cause a hazardous condition.

If you cannot resolve a problem, contact:

Charge Customer Service at 833-482-3822 for all service questions.

Performing maintenance on the e-bike with the drive assist system active could result in accidental activation of the drive assist system. Always remove the battery from the e-bike before performing maintenance.

Cleaning 'live' electrical components may result in shock, sparks, physical personal injury and damage to the electrical component(s). Always de-energize the electrical components (e.g. battery, display) before cleaning.

No Modifications



WARNINGS

DO NOT physically alter your frame in any way.

Don't sandblast, shot blast or glass bead your frame.

Don't use any coarse sandpaper on your bike.

Don't grind, wire brush, file, scrape or machine buff your frame.

Don't weld, braze or let anyone touch your frame with a torch. Don't drill any holes in your frame.

Don't acid dip or etch your frame.

Don't anodize or chrome plate your frame. Any of these procedures will seriously harm the structural integrity and/or longevity of your frame, which could lead to serious accident and injury.

Modifications will void any applicable warranty.

Modifying the E-bike and drive assist system could result in damage to the drive system, faulty or dangerous operating conditions, or violation of rules, regulations and laws related to the use of an E-bike. Never modify the E-bike or its parts for any reason.

Attempts to "hot-rod" or "improve" the speed of the bike can be dangerous to the rider. Only use specified drive-assist service and replacement parts. Failure to do so may void the product warranty.

Kickstands

WARNINGS

If the E-Bike is equipped with a kickstand:

- (1) Improperly installing a kickstand could result in the E-Bike being unstable when parked and tipping over.
- (2) A kickstand must only be installed by a professional bike mechanic.
- (3)- Riding with the kickstand in the down position may result in unexpected contact with the ground or other objects causing loss of control.
- (4)- Always ensure the kickstand is in the up position and securely locked in place before riding the E-Bike.
- (5) Sitting on the E-Bike with the kickstand down may result in the E-Bike tipping over. Never sit on the E-Bike when it is only supported and stabilized by the kickstand. The kickstand is not designed to support the weight of a person.

Trailers

WARNINGS

Riding with a bike trailer that is incompatible with the E-Bike could create dangerous riding conditions. Always confirm with the bike trailer manufacturer the bike trailer is compatible with the E-Bike before attaching a bike trailer and riding. Consult with a bicycle dealer about trailer attachment.

Racks

WARNINGS

Improperly installing a rear rack could result in the E-Bike being unstable when carrying weight and create dangerous riding conditions. Overloading a rear rack could create dangerous riding conditions. Always observe the maximum weight limit stated by the rack's manufacturer. Never overload the rear rack. An improperly secured load on a rear rack could create dangerous riding conditions. Always ensure the load on the rear rack is properly secured before riding.

—

This page is left blank intentionally.

Foreign Objects Are Very Hazardous

WARNING

Do Not Ride Over Sticks Or Debris (Foreign Objects).

We are aware of rare but very serious accidents where a foreign object was kicked up, entered the spokes of the front wheel, was swept around and either broke the fork or stopped the wheel. The forensic evidence was clear, even if the object itself could not later be located.

See **"Inspect for Safety"** for some information on how frame and fork materials can be broken.

Avoid Riding Over Sticks, Debris:

The riders were taken by surprise and crashed hard. As many riders know, the road side can be littered with a great variety of debris. Common items are sticks, branches, auto parts and trash.

Be Aware Of The Path Ahead, To Avoid:

Scan ahead and if you see debris ride around it. Before moving from your predictable path of travel, look over your shoulder to be sure you can do so safely. If you are riding with a group and at the front, point out debris.

Riding over or into debris could lead to an accident, with risk of serious injury, paralysis or death.

Riding Safety

Required Safety Devices

WARNING

Many states require specific safety devices. It is your responsibility to familiarize yourself with the laws of the state where you ride and to comply with all applicable laws, including properly equipping yourself and your bike as the law requires.

Observe all local bicycle laws and regulations.

Observe regulations about bicycle lighting, licensing of bicycles, riding on sidewalks, laws regulating bike path and trail use, helmet laws, child carrier laws, special bicycle traffic laws.

It's your responsibility to know and obey the laws.

Bicycling Inherent Risk

WARNING

Bicycling is an active sport with inherent risk. "Inherent risk," means that due to the nature of bicycle riding, the situations you encounter while riding expose you to the risk of serious injury, paralysis, or death in an accident. **The risk cannot be taken away or eliminated. You can minimize risk by doing the following:**

- Bicycle training & practice
- Progressive step-by-step learning of new cycling skills
- Exercising good judgement to ride in control
- Bicycle experience, riding with experienced riders
- Use of a proper bicycle helmet and appropriate protective gear
- Reading and thinking about this entire owner's manual, all drive system manufacturer's manuals and instructions that came with your bicycle are essential to your safety and part of the learning process. Visit www.chargebikes.com for manuals and important videos.
- Riding within your own unique capabilities and considering the conditions where you are riding.

Always Wear A Bicycle Helmet

Always wear a cycling helmet which meets the latest certification standards and is appropriate for the type of riding you do.

Always follow the helmet manufacturer's instructions for fit, use and care of your helmet.

Most serious bicycle injuries involve head injuries which might have been avoided if the rider had worn an appropriate helmet.



Figure 1. Bicycle Helmet

Your helmet should be:

- U.S. Consumer Product Safety Commission (CPSC) certified (look for the label on the helmet)
- Properly Sized for You
- Properly Fitted to You
- Properly Attached to Your Head!
- Undamaged



WARNING

Failure to wear a helmet when riding may result in serious injury or death.

23 Safety Points

1. **Make sure the bike fits you and you can operate all the controls comfortably.**
2. **Always do a Pre-Ride Checklist** in this manual BEFORE you get on and ride the bike.
3. **Be thoroughly familiar with the controls of your bicycle.** Read the Technical Information sections in this manual for each components part of your bike.
4. **Be careful to keep body parts and other objects away from the sharp teeth of chain rings, the moving chain, the turning pedals and cranks, and the spinning wheels of your bicycle.**
5. **In addition to your helmet, always wear:**
 - **Shoes** that will stay on your feet and will grip the pedals. Never ride barefoot or in sandals.
 - **Bright, visible clothing** that is not so loose that it can be tangled in the bicycle or snagged by objects at the side of the road or trail.
 - **Protective eye wear**, to protect against airborne dirt, dust and bugs —tinted when the sun is bright, clear when it's not.
6. **Make sure you understand the Intended Use of your bike.** See Important Safety Information, "Intended Use."
7. **Ride at a speed appropriate for conditions.** Increased speed means higher risk.
8. **Obey all Rules of the Road and all local traffic laws.**
9. **You are sharing the road or the path with others — motorists, pedestrians and other cyclists. Respect their rights.**
10. **Ride defensively.** Always assume that others do not see you.
11. **Look ahead, and be ready to avoid hazards.**
 - Vehicles slowing or turning, entering the road or your lane ahead of you, or coming up behind you.
 - Parked car doors opening.
 - Pedestrians stepping out.
 - Children or pets playing near the road.
 - Pot holes, sewer grating, railroad tracks, expansion joints, road or sidewalk construction, debris and other obstructions that could cause you to swerve into traffic, catch your wheel or otherwise cause you to lose control and have an accident.
 - The many other hazards and distractions which can occur on a bicycle ride.

See also Important Safety Information, "Foreign Objects are Very Hazardous."

Safety Points To Observe During Every Ride

12. **Ride in designated bike lanes, on designated bike paths or as close to the edge of the road as possible, in the direction of traffic flow or as directed by local governing laws.**
13. **Stop at stop signs and traffic lights; slow down and look both ways at street intersections.** Remember that a bicycle always loses in a collision with a motor vehicle, so be prepared to yield even if you have the right of way.
14. **Use approved hand signals for turning and stopping.**
15. **NEVER RIDE WITH HEADPHONES OR EARBUDS.** They can mask traffic sounds and emergency vehicle sirens, distract you from concentrating on what's going on around you, and their wires can tangle in the moving parts of the bicycle, causing you to lose control.
16. **NEVER CARRY A PASSENGER.**

BEFORE installing a child carrier or trailer, check with the bicycle manufacturer to make sure the bicycle is designed for it.

If the bicycle is suitable for a child carrier or trailer, make sure that the carrier or trailer is correctly mounted and the child secured and wearing an approved and properly fitted helmet. See also Important Safety Information "Child Carriers"
17. **Never carry anything which obstructs your vision or your complete control of the bicycle, or which could become entangled in the moving parts of the bicycle.**
18. **Never hitch a ride by holding on to another vehicle.**
19. **Don't do stunts, wheelies or jumps.** Think carefully about your skills before deciding to take the large risks that go with this kind of riding.
20. **Don't weave through traffic or make any moves that may surprise people with whom you are sharing the road.**
21. **Observe and yield the right of way.**
22. **Never ride your bicycle while under the influence of alcohol or drugs.**
23. **If possible, avoid riding in bad weather, when visibility is obscured, at dawn, dusk or in the dark, or when extremely tired.** Each of these conditions increases the risk of accident.

What to Know Before Your First Ride

When you buckle on your helmet and go for your first familiarization ride on your new bicycle, be sure to pick a controlled environment, away from cars, other cyclists, obstacles or other hazards. Ride to become familiar with the controls, features and performance of your new bike.

Familiarize yourself with the braking action of the bike. See Technical Information, "Brakes." Test the brakes at slow speed, putting your weight toward the rear and gently applying the brakes, rear brake first. Sudden or excessive application of the front brake could pitch you over the handlebars. Applying brakes too hard can lock up a wheel, which could cause you to lose control and fall. Skidding is an example of what can happen when a wheel locks up.

If your bicycle has toeclips or clipless pedals, practice getting in and out of the pedals. See Technical Information, "Pedals."

If your bike has suspension, familiarize yourself with how the suspension responds to brake application and rider weight shifts. See Technical Information, "Suspension."

Practice shifting the gears. See Technical Information, "Gears." Remember to never move the shifter while pedaling backward, nor pedal backwards immediately after having moved the shifter. This could jam the chain and cause serious damage to the bicycle.

Check the handling and response of the bike; and check the comfort.

If you have any questions, or if you feel anything about the bike is not as it should be, consult with a professional bicycle mechanic before you ride again.



WARNING

The Charge XC model is an ASTM Condition 2 intended use bike.

For starters, it is almost certain you will fall off.

Get training! Join a club and find experienced people to teach you. Practice and learn to stay in control. Carefully, progressively, learn to expand your limits, but always ride within them.

Riding Off-Road

WARNING

The Charge XC model is an ASTM Condition 2 intended use bike.

INTENDED For paved roads, gravel or dirt roads that are in good condition, and bike paths. See “Intended Use of the Bike.”

Off road riding usually involves many, many variables such as constantly changing traction, obstacles, changes in line of sight, up hill, down hill, soft surfaces, dry surfaces and wet surfaces.

Off road riding requires managing a complex and constantly changing rider-to-bicycle feedback loop of traction, weight distribution, application of power, application of brakes and steering driven by the conditions one encounters.

Learning to ride off road is a process. It does not automatically occur because you have a mountain bike or off-road capable bike.

Learning to ride off road does not come from watching “extreme” mountain bike videos or TV. In fact the riders in those films are professional entertainers and/or daredevils, not teachers.

The complexity and ever-changing nature of off road riding requires focus, concentration, strength, fitness and learning to read the trail. The art of managing all this while surrounded by nature makes this a challenging and wonderful sport. We recommend that children not ride on rough terrain unless they are accompanied by an adult.

Here are just some off-road riding concerns:

1. The variable conditions and hazards of off-road riding require close attention and specific skills. Start slowly on easier terrain and build up your skills. If your bike has suspension, the increased speed you may develop also increases your risk of losing control and falling. Get to know how to handle your bike safely before trying increased speed or more difficult terrain.
2. Wear safety gear appropriate to the kind of riding you plan to do.
3. Don't ride alone in remote areas. Even when riding with others, make sure that someone knows where you're going and when you expect to be back.
4. Always take along some kind of identification, so that people know who you are in case of an accident; and take along a couple of dollars in cash for a candy bar, a cool drink or an emergency phone call.
5. Yield right of way to pedestrians and animals. Ride in a way that does not frighten or endanger them, and give them enough room so that their unexpected moves don't endanger you.
6. Be prepared. If something goes wrong while you're riding off-road, help may not be close.

WARNING

Off-road riding is very different from riding a bike on the road. For starters, it is almost certain you will fall off. Get training! Join a club and find experienced people to teach you. Practice and learn to stay in control. Carefully, progressively, learn to expand your limits, but always ride within them.

Off-Road Respect

Obey the local laws regulating where and how you can ride off-road, and respect private property. You may be sharing the trail with others — hikers, equestrians, other cyclists. Respect their rights. Stay on the designated trail. Don't contribute to erosion by riding in mud or with unnecessary sliding. Don't disturb the ecosystem by cutting your own trail or shortcut through vegetation or streams. It is your responsibility to minimize your impact on the environment. Leave things as you found them; and always take out everything you brought in.

About Bicycle Suspension

Suspension will increase the handling capabilities and comfort of your bicycle. This enhanced capability may allow you to ride faster, particularly on rough or bumpy surfaces. As common sense tells you, increased speed brings increased risk.

WARNING

Do not confuse the built-in capabilities of a suspension bike with your own capabilities, which must be learned.

Increasing your skill will take time and practice. Stay in control, and carefully, gradually learn the feel and handling of your suspension bike.

When you apply the front brakes on a suspension bike, the front of the bike will fall or dip as weight shifts forward. This is normal. (The front of your car dips when you apply the brakes.) You must learn to anticipate this weight shift and compensate by shifting your body weight back.

Stay In Control

WARNING

Failure to ride in control could result in a fall leading to serious injury, paralysis, or death.

While the risks inherent to this sport cannot be eliminated, you can minimize the risks by riding in control and wearing a helmet. The reality is that simple, and that challenging.

Wet Weather Affects 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 your tires don't grip nearly as well. This makes it harder to control speed and easier to lose control.

WARNING

Wet weather impairs traction, braking and visibility, both for the bicyclist and for other vehicles sharing the road.

The risk of an accident is dramatically increased in wet conditions.

To make sure that you can slow down and stop safely in wet conditions, ride more slowly and apply your brakes earlier and more gradually than you would under normal, dry conditions. See also SECTION 4.C.

Jumping

WARNING

Jumping is very risky. You could have a fall leading to serious injury, paralysis or death.

Jumping a mountain bike is fun, but it puts extreme stress on your bike. Perhaps most vulnerable to jumping-related damage is your fork. Riders who insist on jumping their bikes risk serious damage, to their bicycles as well as themselves.

Mountain Biking Increases Required Inspections and Maintenance

WARNING

Mountain bike riding is very hard on bikes.

Mountain bikes need frequent cleaning, maintenance and inspection.

Clean your bike after every ride and conduct a pre-ride inspection before every ride. Detailed inspection as outlined in Inspect for Safety in this manual is needed more often than for road bikes. Failure to keep up with maintenance and inspection increases the risk of an accident, with risk of serious injury, paralysis or death.

Bicycle Reflectors

Bicycle reflectors are designed to pick up and reflect street lights and car lights in a way that may help you to be seen and recognized as a moving bicyclist.

WARNING

Do not remove the front or rear reflectors or reflector brackets from your bicycle. They are an integral part of the bicycle's safety system.

The location and type of each reflector on your bike is required by a national authority, in the US, the US Consumer Product Safety Commission (CPSC). Your bike have: 1. A front mounted forward facing reflector 2. A rear mounted, rear facing reflector, 3. A spoke mounted reflector on each wheel, 4. Front and rear facing reflectors on the left and right pedal.

Check reflectors and their mounting brackets 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.

Removing the reflectors may reduce your visibility to others using the roadway. Being struck by other vehicles may result in serious injury or death.

Riding at Night, Dusk, and Dawn

Riding a bicycle at night, dusk, and dawn is much more dangerous than riding during the day.

A cyclist is very difficult for motorists and pedestrians to see.



WARNING

Children should never ride at dawn, at dusk or at night.

Adults who chose to accept the greatly increased risk of riding at dawn, at dusk or at night need to take extra care both riding and choosing specialized equipment which helps reduce that risk.

If you choose to ride under conditions of poor visibility, check and be sure you comply with all local laws about night riding, and take the following strongly recommended additional precautions:

- Purchase and install battery or generator powered head and tail lights which meet all regulatory requirements and provide adequate visibility.
- Wear light colored, reflective clothing and accessories, such as a reflective vest, reflective arm and leg bands, reflective stripes on your helmet, flashing lights attached to your body and/or your bicycle ... any reflective device or light source that moves will help you get the attention of approaching motorists, pedestrians and other traffic.
- Make sure your clothing or anything you may be carrying on the bicycle does not obstruct a reflector or light.
- Make sure that your bicycle is equipped with correctly positioned and securely mounted reflectors.

(continued on the next page...)

(continued from previous page...)

 **WARNING**

Riding at night/dusk or at dawn is very hazardous. Avoid riding at night. If you choose to ride at night:

■ Install front and rear lights. ■ Install a blinker or strobe light. ■ Check your state or national laws. Lights are required for riding at dusk, night, or dawn.	■ Wear reflective clothing. ■ Stay alert, others may not see you. ■ Make sure your bicycle is equipped with all required reflectors, lights, strobes, or blinkers.
--	--

Much Higher Risks At Night

The risk of an accident, particularly being struck by a motor vehicle, is much higher at night. If you choose to accept this higher risk, improve your odds with a proper lighting system, strobe light, light-colored reflective clothing and careful riding. Seek the advice of an experienced bicycle commuter at your retailer.

Mountain Biking At Night:

Mountain biking at night is risky. Take the challenges outlined in Riding Safety, “Riding Off-Road” and add another level of difficulty and risk. Seeing the terrain is much more difficult at night. Mountain biking at night is only for skilled mountain bikers, on familiar terrain, with excellent light systems, riding with other skilled mountain bikers, and riding cautiously.

Adding Lighting:

Reflectors are not a substitute for proper lights. It is your responsibility to equip your bicycle with all national, state and locally mandated lights. Riding at dawn, at dusk, at night or at other times of poor visibility without a bicycle lighting system which meets local and state laws and without reflectors is dangerous and may result in serious injury or death.

If you ride your bike before dawn or 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. Traffic laws treat bicycles like any other vehicle. That means you must have a white front and a red rear light operating if you are riding after dusk.

Flashing (blinker) and Strobe Lighting

We also strongly urge you to use a flashing light or strobe. All of us who ride at night or in conditions of lower visibility use flashers. They can save your life.

Bicycle Lights

WARNING

Some urban, city, commuter bicycle models have built in, integrated daytime running lights or “be seen” lights.

INTENDED USE: These lights are intended to be daytime running lights. They are intended to draw attention to you while riding and increase the chance of other cyclists, pedestrians and motorists seeing you. They are “be seen” lights, not lights designed to illuminate the road or hazards in the road.

NOT INTENDED: Because these lights are not as bright or intense, they are NOT a replacement for higher intensity lights intended to illuminate the road or hazards in the road.

WHILE RIDING: Stop before changing the operating mode.

HIGHER RISKS RIDING AT NIGHT

ANY LIGHTING SYSTEM CAN FAIL WITHOUT WARNING.

Ride cautiously at night. Many experienced cyclists use two lighting systems, one helmet mounted, one mounted on the bicycle.

DO NOT REMOVE THE REFLECTOR SYSTEM FROM YOUR BIKE.

YOU CAN BE SEVERELY INJURED, PARALYZED OR KILLED IN AN ACCIDENT IF YOU IGNORE THESE WARNINGS.

Riding In Traffic, Commuting



WARNING

Riding in traffic (and commuting) is hazardous and you can be severely injured or killed doing it.

You must learn and obey local traffic laws. Riding in traffic is hazardous. We cannot teach you about all of these hazards.

We suggest:

- Effective Cycling (ISBN 0-262-06159-7) by John Forester.
- And, www.bicyclesafe.com by Michael Bluejay "How to Not Get Hit by Cars: Important lessons on Bicycle Safety"

Here are just some important topics you must consider:

Traffic Law, Accidents, Intersections,

Commuting And Utility Cycling Where To Ride, On Roadway, Changing Lanes In Traffic, Riding At Night, Improving Your Odds With Safety, Lighting, And Weather Equipment

Many bike clubs conduct training programs and workshops that focus on these and other safe cycling topics. Ask at your local bike shop. Seek the advice of an experienced bicycle commuter at your retailer.

Adjustment (Fit) Instructions

NOTE: Correct fit is an essential element of bicycling safety, performance and comfort. Making the adjustments to your bicycle which result in correct fit for your body and riding conditions requires experience, skill and special tools. Always have your dealer make the adjustments on your bicycle; or, if you have the experience, skill and tools, have your dealer check your work before riding.

WARNING

If your bicycle does not fit properly, you may lose control and fall.

Do not ride a bike that doesn't fit.

Standover Height

Standover height is the basic element of bike fit. It is the distance from the ground to the top of the bicycle's frame at that point where your crotch is when straddling the bike. See next Figure..

To check for correct standover height, straddle the bike while wearing the kind of shoes in which you'll be riding, and bounce vigorously on your heels. If your crotch touches the frame, the bike is too big for you.

Don't even ride the bike around the block. A bike which you ride only on paved surfaces and never take off-road should give you a minimum standover height clearance of two inches (5 cm).

A bike that you'll ride on unpaved surfaces should give you a minimum of three inches (7.5 cm) of standover height clearance. And a bike that you'll use off road should give you four inches (10 cm) or more of clearance.

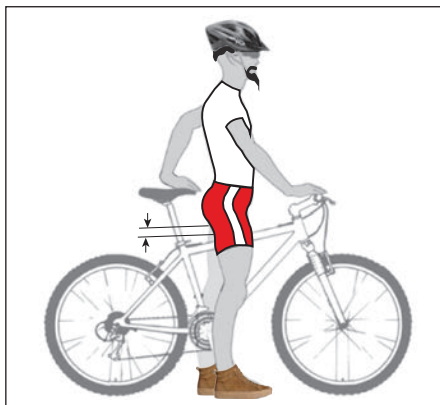


Figure Standing over the bike

Standover height does not apply to bicycles with step-through frames.

Instead, the limiting dimension is determined by saddle height range. You must be able to adjust your saddle position as described in "Adjusting the Saddle Height" without exceeding the limits set by the height of the top of the seat tube and the "Minimum Insertion" or "Maximum Extension" mark on the seat post.

Saddle Height

Correct saddle adjustment is an important factor in getting the most performance and comfort from your bicycle.

WARNING

Improperly adjusted saddle(seat) height could affect the rider's ability to reach the handlebar and pedals resulting in unexpected movement, loss of control and serious injury or death.

Determining the correct saddle height:

1. Start by rotating the crank so the pedal with your heel on it is in the down position and the crank arm is parallel to the seat tube.



Figure Correct saddle Height and seated

2. When seated on the saddle:

If your leg is locked straight at the knee with your foot on the pedal in the down position, the saddle is too high.

If your hips must rock for the heel to reach the pedal, the saddle is too high.

If your leg is bent at the knee with your heel on the pedal, the saddle is too low.

3. Change the saddle height, so that when seat and with the pedal at the bottom of the rotation, your leg is straight.

Setting the Saddle Height

1. Use Charge torque wrench to loosen the seat post clamp bolt; turn it counter-clockwise. Loosen it enough to slide the seat post up and down easily. There is no need to remove the bolt, seat clamp, or seat post.



Figure Loosening the seat binder bolt.

2. Raise or lower the seat post.



Figure Setting the saddle height



CAUTION

Do not twist or rotate the seat post while it is installed in the frame. This action could result in scratching or cutting the seat post.

3. Make sure that the seat post does not project from the frame beyond its "Minimum Insertion" or "Maximum Extension" mark.
4. Make sure the seat nose is in-line with the bike frame.

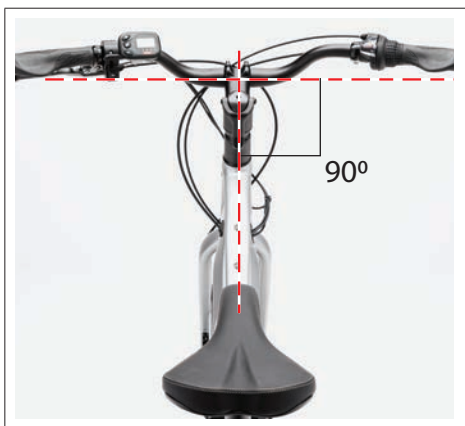


Figure Aligning the saddle nose.

4. Use Charge torque wrench to re-tighten the seat post clamp.

Continue until you feel and hear a loud clicking noise indicating that the tightening torque has been reached.



Figure Setting the saddle height

WARNING

1. Always check and make sure the seat post "MINIMUM INSERT" marks are below the seat clamp and cannot be seen.
3. Ensure that the seat clamp is tightened and the saddle cannot move.

WARNING

Riding with an improperly tightened seat post can allow the saddle to turn or move and cause you to lose control and fall. Therefore:

1. Ask a bicycle dealer to help you make sure you know how to correctly clamp your seat post.
2. Understand and apply the correct technique for clamping your seat post.
3. Before you ride the bike, first check that the seat post is securely clamped.

Saddle Front and Back Adjustment

The saddle can be adjusted forward or back to help you get the optimal position on the bike.

Make sure that the clamp mechanism is clamping on the straight part of the saddle rails and is not touching the curved part of the rails, and that you are using the recommended torque on the clamping fastener(s). See also "Tightening Torques."

Saddle Angle Adjustment

Most people prefer a horizontal saddle; but some riders like the saddle nose angled up or down just a little. A bicycle dealer can adjust saddle angle or teach you how to do it.

If you choose to make your own saddle angle adjustment and you have a single bolt saddle clamp on your seat post, it is critical that you loosen the clamp bolt sufficiently to allow any serrations on the mechanism to disengage before changing the saddle's angle, and then that the serrations fully re-engage before you tighten the clamp bolt to the recommended torque (See manufacturer's instructions).

NOTE: If your bicycle is equipped with a suspension seat post, follow the recommended service intervals for your suspension seat post. See manufacturer's instructions.

Small changes in saddle position can have a substantial effect on performance and comfort. To find your best saddle position, make only one adjustment at a time.

WARNING

When making saddle angle adjustments with a single bolt saddle clamp, always check to make sure that the serrations on the mating surfaces of the clamp are not worn.

Worn serrations on the clamp can allow the saddle to move, causing you to lose control and fall.

WARNING

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

A correctly tightened saddle adjusting mechanism will allow no saddle movement in any direction. Periodically check to make sure that the saddle adjusting mechanism is properly tightened.

If, in spite of carefully adjusting the saddle height, tilt and fore-and-aft position, your saddle is still uncomfortable, you may need a different saddle design. Saddles, like people, come in many different shapes, sizes and resilience.

⚠ WARNING

Some people have claimed that extended riding with a saddle which is incorrectly adjusted or which does not support your pelvic area correctly can cause short-term or long-term injury to nerves and blood vessels, or even impotence.

If your saddle causes you pain, numbness or other discomfort, listen to your body and stop riding until you see a bicycle dealer about saddle adjustment or a different saddle.

⚠ WARNING

Always tighten fasteners to the correct torque.

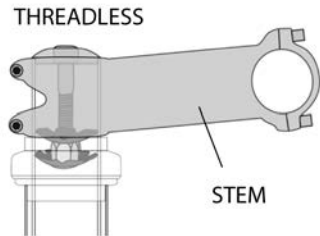
Bolts that are too tight can stretch and deform. Bolts that are too loose can move and fatigue. Either mistake can lead to a sudden failure of the bolt, causing you to lose control and fall.

Handlebar Height And Angle

Your bike is equipped with a “threadless” stem, which clamps on to the outside of the steerer tube.

A bicycle dealer may be able to change handlebar height by moving height adjustment spacers from below the stem to above the stem, or vice versa. Otherwise, you’ll have to get a stem of different length or rise. Consult your dealer. Do not attempt to do this yourself, as it requires special knowledge. See also “Folding Stem.”

FIGURE 6



Some bicycles are equipped with an adjustable angle stem. If your bicycle has an adjustable angle stem, ask your dealer to show you how to adjust it. Do not attempt to make the adjustment yourself, as changing stem angle may also require adjustments to the bicycle's controls.

 WARNING

Always tighten fasteners to the correct torque.

Bolts that are too tight can stretch and deform. Bolts that are too loose can move and fatigue. Either mistake can lead to a sudden failure of the bolt, causing you to lose control and fall.

 WARNING

An insufficiently tightened stem binder bolt, handlebar binder bolt or bar end extension clamping bolt may compromise steering action, which could cause you to lose control and fall.

Place the front wheel of the bicycle between your legs and attempt to twist the handlebar/stem assembly. If you can twist the stem in relation to the front wheel, turn the handlebars in relation to the stem, or turn the bar end extensions in relation to the handlebar, the bolts are insufficiently tightened.

A bicycle dealer can also change the angle of the handlebar or bar end extensions.

Handlebar Controls Positions

The angle of the brake and shift control levers and their position on the handlebars can be changed.

Ask a bicycle dealer to make the adjustments for you.

If you choose to make your own control lever angle adjustment, be sure to re-tighten the clamp fasteners to the specified torque

See "Tightening Torques."

Brake Reach

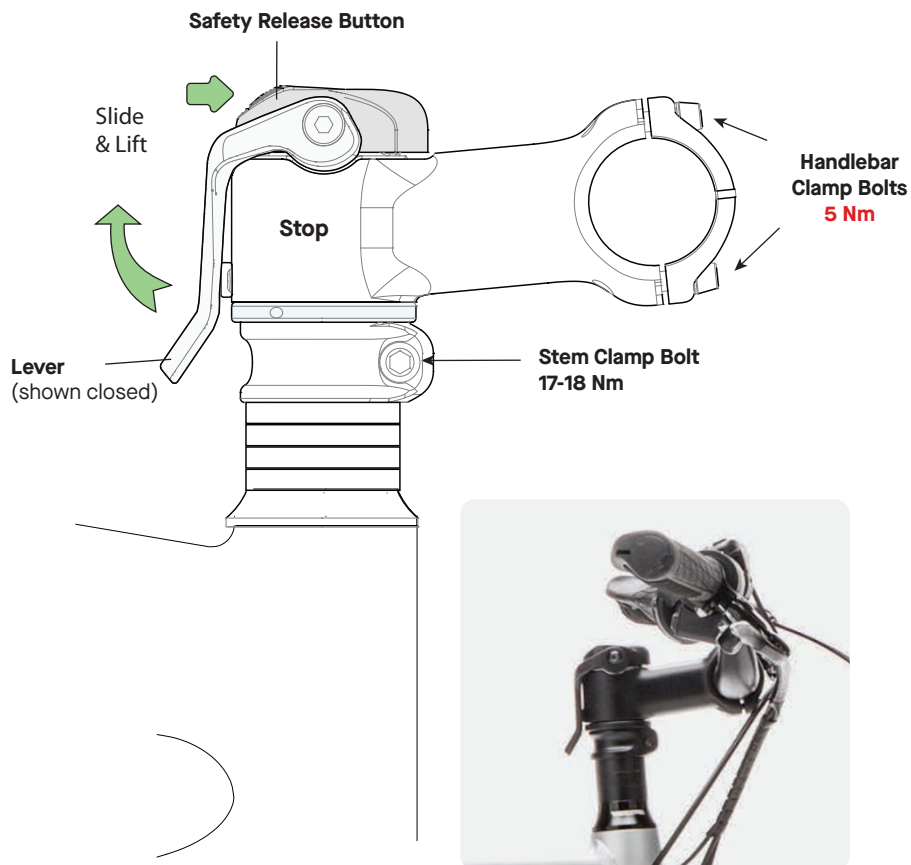
Many bikes have brake levers which can be adjusted for reach. If you have small hands or find it difficult to squeeze the brake levers, your dealer can either adjust the reach or fit shorter reach brake levers.

 WARNING

The shorter the brake lever reach, the more critical it is to have correctly adjusted brakes, so that full braking power can be applied within available brake lever travel.

Brake lever travel insufficient to apply full braking power can result in loss of control, which may result in serious injury or death.

Folding Stem



Changing Handlebar Position

See also video at www.chargebikes.com.

1. Using your thumb, slide the safety release button (1) forward and lift the lever up (2).



Figure Opening stem Lever



Figure Stem lever open



CAUTION

Lifting the lever without pushing forward the safety release button can damage or break the button.

2. Rotate the handlebar 90 degrees into riding or storage position.



Riding position - The handlebar is perpendicular to the frame and locked in place with the lever down.



Storage position - The handlebar turned parallel to the bike frame on either side and then locked in place with the lever down. This position reduces the space needed to park, store, and/or transport the bike.

3. Close the lever (2). Push it down until the lever arm touches the stem stop (a).

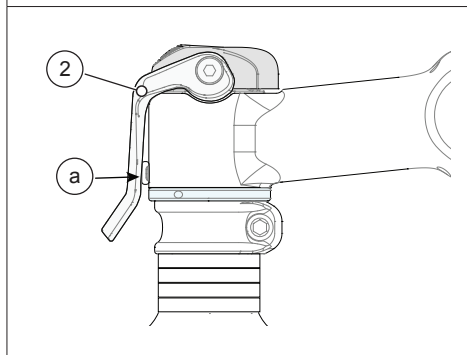


Figure Lever closed correctly

4. Stand in front of the bike. Place your feet on both sides of the wheel and hands on the handlebar. Try to move the handlebar while holding the wheel. The handlebar must not move while the wheel is held fixed. If it does, something is wrong. Do not ride the bike until the conditions are corrected, see next WARNING.

See also "Adjusting Folding Stem Lever Tension."

WARNING

The stem lever is closed correctly when:

- A strong resistance is felt to the force of your hand when closing the lever.
- An impression of the lever is left in the palm of your hand after removing your hand from the closed lever.
- The handlebar does not have any play or side-to-side movement.

The stem lever is too loose and stem tension must be adjusted if:

- A strong resistance to the force of your hand is not felt when closing (locking) the stem lever.
- Closing the lever does not leave an impression of the lever in your palm.
- After the lever is closed you can still rock the handlebar side-to-side or the handlebars have a loose feeling. The stem tension (play) must be adjusted. See "Adjusting Stem Tension"

Never ride with an open or loose lever.

Make sure the lever is closed. If you ride with an open or loose lever you may lose steering control of the bicycle. Failure to properly and fully close the lever could lead to an accident with risk of serious injury, paralysis or death.

Adjusting Folding Stem Lever Tension

The stem's tension adjust ring changes stem lever tension and stem play. It must be tensioned correctly. Some wear will occur normally over time as the stem lever is used. We suggest that stem tension be inspected frequently, more so if you use change position of your stem often. The stem tension adjustment should be performed by a professional bicycle mechanic. Show the mechanic these instructions.

To adjust:

1. Secure the bike upright.
2. If it is not already, rotate the stem so that it is in the riding position. See "Setting the Adjustable Stem Position."
3. Press the safety release button forward, and lift the lever up.
4. Use a 2 mm hex key to loosen the set screw.
5. Insert a 3 mm tool into the small hole in the tension adjustment ring. Use the tool to rotate the tensions adjustment ring.

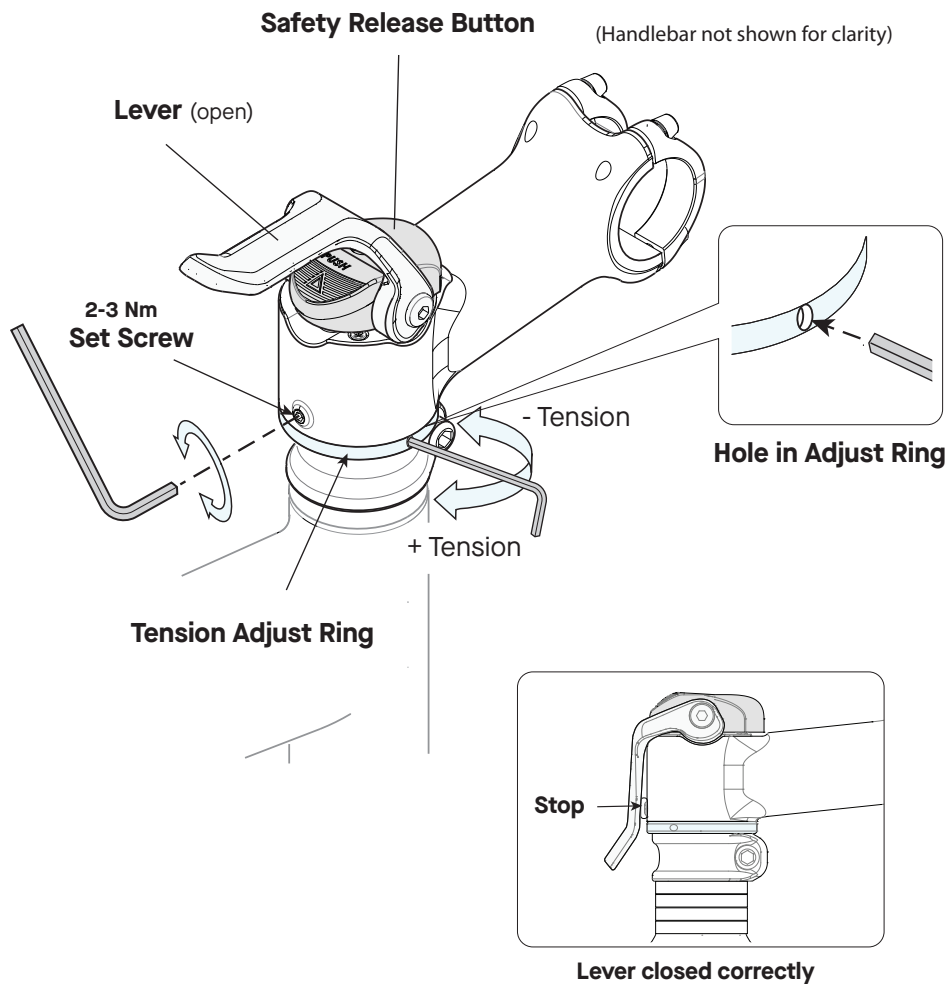
Rotate tension adjustment ring clockwise "+" to increases tension.

Rotate tension adjustment ring counter-clockwise "-" to decrease tension.

Make small changes in tension and then close the lever to check the change in lever tension. If may be necessary to change the tension several times until the correct tension is set.

When the correct lever tension is set when:

- (1) - Closing the lever makes an impression of the lever in the palm of your hand .
 - (2) - No play is present in the stem/handlebar. The stem/handlebar does not rock side-to-side or feel loose."
6. With the correct lever tension set, and the lever in the "up" position, tighten the set screw with the 2 mm hex key. This set screw holds the tension adjustment ring in place.
 7. Close the lever.

**⚠ WARNING**

Never ride with an open or loose lever. Make sure the lever is closed. If you ride with an open or loose lever you may lose steering control of the bicycle. Failure to properly and fully close the lever could lead to an accident with risk of serious injury, paralysis or death.

Technical Information

- It's important to your safety, performance and enjoyment to understand how things work on your bicycle.
- We urge you to ask a professional bike mechanic how to do the things described in this section before you attempt them yourself, and that you have a professional bike mechanic check your work before you ride the bike.
- If you have even the slightest doubt as to whether you understand something in this section of the manual, talk to your professional bike mechanic.

About Wheels

Bicycle wheels are designed to be removable for easier transportation and for repair.

In most cases, the wheel axles are inserted into slots, called "dropouts" in the fork and rear of frame, but some bikes use what is called a "through axle" wheel mounting system. Additionally, note that your bicycle may be equipped with a different securing method for the front wheel than for the rear wheel.

It is very important that you understand the type of wheel securing method on your bicycle, that you know how to secure the wheels correctly, and that you know how to apply the correct clamping force that safely secures the wheel.

(continued on next page...)

About the brake discs

CAUTION

Exercise care in touching the rotor or caliper. Disc rotors have sharp edges, and both rotor and caliper can get very hot during use. Also, be careful not to damage the disc, caliper or brake pads when the wheel is removed or when re-inserting the disc into the caliper. Never pull a disc brake's control lever unless the disc is correctly inserted in the caliper.

Tightening Wheel Axles

WARNING

Riding with improperly secured wheels can allow the wheels to wobble or fall off the bicycle, or suddenly stop the wheel, which can cause serious injury or death.

Therefore, it is essential that you:

1. Make sure you know how to install and remove your wheels safely. Ask a professional bicycle mechanic for help.
2. Understand and apply the correct technique for clamping your wheels in place.
3. Each time, before you ride the bike, check that the wheel is securely clamped.

Always make sure your wheels are correctly attached, and the attachment mechanisms closed, locked, and tightened according to the instructions. Check each time before riding the bicycle.

E-Bikes having a rear hub which also serves also as the drive unit, will have added instructions for removing and disconnecting any wires and cables related to the drive system. Be sure to check manufacturer's instruction where necessary.

Your bicycle may be equipped with a different securing method for the front wheel than for the rear wheel.

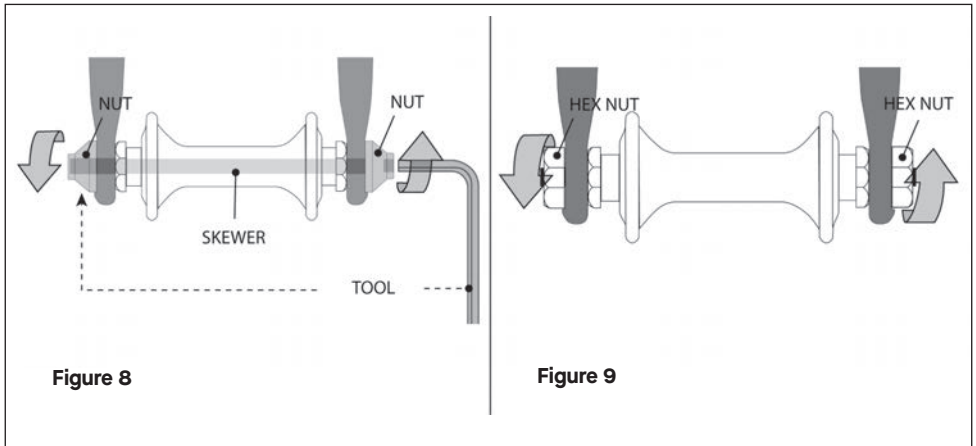
It is very important that you understand the type of wheel securing method on your bicycle, that you know how to secure the wheels correctly, and that you know how to apply the correct clamping force that safely secures the wheel.

Ask a professional bike mechanic to instruct you in correct wheel removal and installation, and ask for the manufacturer's instructions.

Types of Wheel Axles

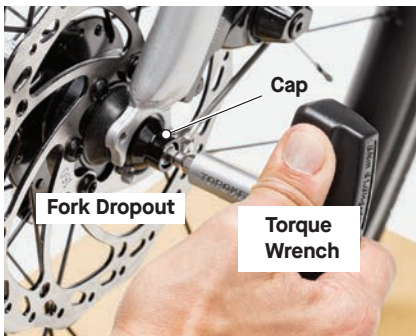
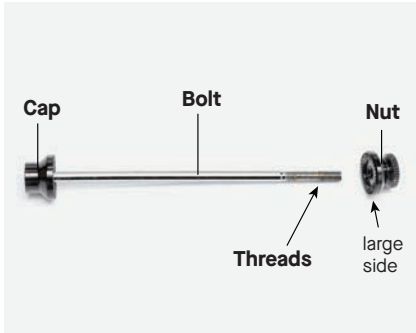
If you do not have a bicycle with a through-axle mounting system, it will have the wheel secured in one of the following two ways:

1. A hollow axle with a shaft ("skewer") running through it which has a nut on one end and a fitting for a hex key, lock lever or other tightening device on the other (through bolt, fig. 8)
 2. Hex nuts or hex key bolts which are threaded on to or into the hub axle (bolt-on wheel, fig. 9).
- Charge bikes with hub motors use hex axle nuts to install the rear wheel.



Charge City and Comfort

Skewer Bolt Axle Parts



Charge City and Comfort Front Wheel Removal

See video at chargebikes.com.

1. Secure the bike upright in a bike stand, with the wheel off the ground.
2. Insert the Charge torque too into the axle bolt head and turn counter-clockwise to loosen the axle bolt.



Figure Loosening axle bolt

3. Unthread the axle nut from the axle end. The axle bolt head may rotate in the axle, so hold the torque tool end in the bolt head if it spins.



Figure Un-threading axle nut

4. Remove the axle bolt.

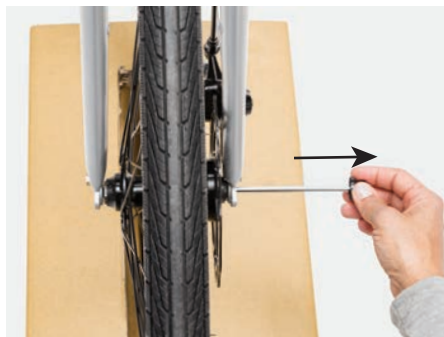


Figure Removing axle bolt and cap.

4. Remove the wheel from the dropouts.

You may need to tap the top of the wheel with the palm of your hand to release the wheel from the front fork.



Figure Removing wheel front dropout.

Charge City and Comfort Front Wheel Installation

See video at chargebikes.com.

1. Secure the bike upright in a bike stand.
2. Install the wheel into the dropouts. Make sure the brake disc locates between the brake pads in the caliper.



Figure Lowering fork dropouts onto wheel.

3. Insert the axle bolt and cap through the wheel hub from the brake disc side of the fork.



Figure Inserting axle into wheel hub.

4. Thread the axle nut onto the other side of the axle bolt with the larger side of the nut facing the dropout. Thread the axle nut with your fingers until the larger side is against the fork dropout surface.



Figure Torque (tightening) with the Charge torque tool.

5. Hold the axle nut with your fingers, and tighten turn the axle bolt clockwise with the Charge torque tool. Continue until you feel and hear the tool loud clicking noise indicating that the tightening torque has been reached.



Figure Torque (tightening) with the Charge torque tool.

WARNING

Make sure the bolt is torqued correctly with the torque wrench. Do not ride the bike if the bolt is not torqued correctly.

The Charge torque tool is pre-set to apply to a specific torque value marked on it. Torque values are indicated in newton meters.

A torque can only be set when turning the tool clockwise. The tool does not apply torque in the counter-clockwise direction.

When using the tool, make sure you hear and feel the click the tool produces when the indicated torque is reached. See video at chargebikes.com.

Other torque tools are available through hardware stores or bikes dealers, and online. Other torque tools can be preset or have a variable range that and must be set for each fastener.

Charge City, Comfort, and XC Rear Wheel Removal/Installation

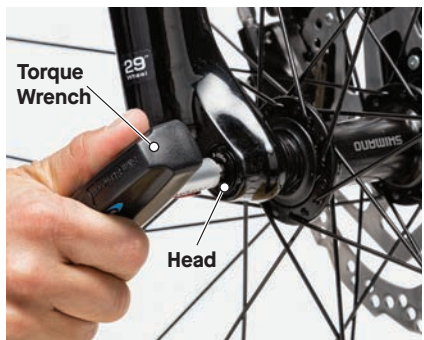
Rear wheel removal and installation is complex.

We surge that you visit a bicycle dealer to help you with installation and removal of the rear wheel on your bike.

You must also observe the drive system manufacturer's instructions concerning installing the rear wheel, tightening the hub axle nuts, and or other drive system specifics such as connecting wires, sensors or controls.

Charge XC

Thru-Axle Parts



Charge XC Front Wheel Removal

See video at chargebikes.com.

1. Secure the bike upright in a bike stand, with the front wheel off the ground.
2. Insert the Charge torque tool into the right side of the axle. Turn the wrench counter-clockwise until the axle is free to slide out.



Figure Loosening the thru-axle.



Figure Sliding out the thru-axle

3. Remove the wheel from the dropouts. You may need to tap the top of the wheel with the palm of your hand to release the wheel from the front fork.

Charge XC Front Wheel Installation

See video at chargebikes.com.

1. Secure the bike upright in a bike stand with the fork off the ground.
2. Use a clean shop towel to wipe clean the thru-axle and ends of the fork dropouts.
3. Install the wheel into the dropouts and align the hub with the fork dropouts.

Make sure the brake disc locates between the brake pads in the caliper as you insert the wheel between the dropouts.



Figure Installing wheel into dropouts



Figure Aligned fork dropouts and wheel hub hole.

4. Apply light bicycle grease to the thru-axle threads and around the bolt head, then insert the thru-axle into the right side fork dropout and through the wheel hub.



Figure Aligned fork dropouts and wheel hub.

5. Insert the Charge torque tool into the axle head and turn the axle clockwise to thread the axle into the left side fork dropout.

Continue until you feel and hear a loud clicking noise indicating that the tightening torque has been reached.



Figure Torque (tightening) with the Charge torque tool.

WARNING

Make sure the bolt is torqued correctly with the torque wrench. Do not ride the bike if the bolt is not torqued correctly.

The Charge torque tool is pre-set to apply to a specific torque value marked on it. Torque values are indicated in newton meters. A torque can only be set when turning the tool clockwise. The tool does not apply torque in the counter-clockwise direction.

When using the tool, make sure you hear and feel the click the tool produces when the indicated torque is reached. See video at chargebikes.com.

Other torque tools are available through hardware stores or bikes dealers, and online. Other torque tools can be preset or have a variable range that and must be set for each fastener.

Charge XC Rear Wheel Removal/Installation

Rear wheel removal and installation is complex.

We surge that you visit a bicycle dealer to help you with installation and removal of the rear wheel on your bike.

Brakes

Your bike is equipped with disc brakes, disc brakes, which operate by squeezing a hub-mounted disc between two brake pads. The brakes are operated by way of a handlebar mounted lever.

WARNING

1. Riding with improperly adjusted brakes or worn brake pads is dangerous and can result in serious injury or death.
2. Applying brakes too hard or too suddenly can lock up a wheel, which could cause you to lose control and fall. Sudden or excessive application of the front brake may pitch the rider over the handlebars, which may result in serious injury or death.
3. Disc brakes are extremely powerful. Take extra care in becoming familiar with these brakes and exercise particular care when using them.
4. Disc brakes can get extremely hot with extended use. Be careful not to touch a disc brake until it has had plenty of time to cool.
5. See the brake manufacturer's instructions for installation, operation and care of your brakes. If you do not have the manufacturer's instructions, see a bicycle dealer or contact the brake manufacturer.
6. If replacing worn or damaged parts, use only manufacturer approved genuine replacement parts

Brake Controls And Features

It's very important to your safety that you learn and remember which brake lever controls which brake on your bike.

Traditionally, in the U.S. the right brake lever controls the rear brake and the left brake lever controls the front brake; but, to check how your bike's brakes are set up, squeeze one brake lever and look to see which brake, front or rear, engages. Now do the same with the other brake lever.

Make sure that your hands can reach and squeeze the brake levers comfortably. If your hands are too small to operate the levers comfortably, consult a bicycle dealer before riding the bike. The lever reach may be adjustable; or you may need a different brake lever design.

How Brakes Work

The braking action of a bicycle is a function of the friction between the brake surfaces — usually the brake pads and the wheel rim or the disc brake rotor. To make sure that you have maximum friction available, keep your wheel rims, disc brake rotors, and brake pads clean and free of dirt, lubricants, waxes or polishes.

Brakes are designed to control your speed, not just to stop the bike. Maximum braking force for each wheel occurs at the point just before the wheel "locks up" (stops rotating) and starts to skid. Once the tire skids, you actually lose most of your stopping force and all directional control. You need to practice slowing and stopping smoothly without locking up a wheel. The technique is called progressive brake modulation. Instead of jerking the brake lever to the position where you think you'll generate appropriate braking force, squeeze the lever, progressively increasing the braking force. If you feel the wheel begin to lock up, release pressure just a little to keep the wheel rotating just short of lockup.

It's important to develop a feel for the amount of brake lever pressure required for each wheel at different speeds and on different surfaces. To better understand this, experiment a little by walking your bike and applying different amounts of pressure to each brake lever, until the wheel locks.

When you apply one or both brakes, the bike begins to slow, but your body wants to continue at the speed at which it was going. This causes a transfer of weight to the front wheel (or, under heavy braking, around the front wheel hub), which could send you flying over the handlebars.

A wheel with more weight on it will accept greater brake pressure before lockup; a wheel with less weight will lock up with less brake pressure. So, as you apply brakes and your weight is transferred forward, you need to shift your body toward the rear of the bike to transfer weight back on to the rear wheel; and at the same time, you need to both decrease rear braking and increase front braking force. This is even more important on descents, because descents shift weight forward.

Two keys to effective speed control and safe stopping are controlling wheel lockup and weight transfer. This weight transfer is even more pronounced if your bike has a front suspension fork. Front suspension “dips” under braking, increasing the weight transfer (Technical Information “About Bicycle Suspension”). Practice braking and weight transfer techniques where there is no traffic or other hazards and distractions.

Everything changes when you ride on loose surfaces or in wet weather. Tire 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 pads reduces their ability to grip. The way to maintain control on loose or wet surfaces is to go more slowly.

Aftermarket Brake Systems



WARNING

Do not modify your bike in any way to mount brakes systems. Modifications can damage your bike leading to an accident. You can be severely injured or killed.

Choose only brakes that mount to the frame, swingarm, or fork using only the existing disc brake, V-brake or cantilever mounts. Do not modify the existing mounts or clamp, weld, or in any other way add new or different mounts.

Any modification will void the warranty and may weaken or damage the frame. For installation instructions and other warnings, read the literature provided by the brake manufacturer.

When choosing replacements, please consult a bicycle dealer.

Have your bike's brakes installed and adjusted by a professional bike mechanic.

About Seat Posts

Minimum Seat Post Insert Depth

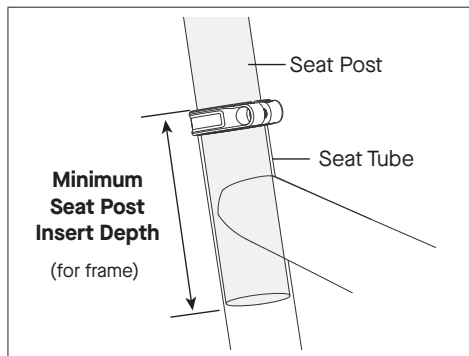


Figure Example of frame minimum insert

What is it?

Some frames have designs that require no less than a specified length of the seat post to be inserted inside the frame. This requirement is more common on high performance carbon fiber mountain bikes, but can exist for other designs. The frame and the seat post work together, support each other. Inadequate overlap of these parts can lead to failure in high load situations.

Such a minimum seat post insert limit will be marked on the frame, via a frame decal and/or in the owner's manual supplement as "minimum seat post insert" in the Geometry/Specifications section.

How Does It Affect My Bike?

You must always have at least the required minimum length of seat post inserted inside the frame.

WARNING

If your frame has a minimum seat post insert depth, make sure the specified length seat post is installed inside the seat tube at all times.

Failure to insert the seat post correctly can improperly stress the frame and/or the seat post causing the frame to break while riding.

YOU MUST ALSO BE AWARE THAT bicycle seat posts are permanently marked by the manufacturer with a "MINIMUM INSERT" line on the seat post itself. You must not rely on this marking as an indication of the proper MINIMUM SEAT POST INSERTION DEPTH.

YOU CAN BE SEVERELY INJURED, PARALYZED OR KILLED IN AN ACCIDENT IF YOU IGNORE THIS WARNING.

Cutting Seat Post

To fit some riders who require a lower seat it may be necessary to cut the seat post. This must be done by a professional mechanic who will:

- Carefully measure, Cut with the proper tools,
- Smoothly finish the new lower edge of the shortened seat post, Re-mark the CPSC required minimum insertion line on the seat post, Install with the proper lubricant or carbon gel.



WARNING

DON'T CUT A SEAT POST YOURSELF.

If the seat post requires cutting, have it done by a professional bike mechanic with experience cutting high performance carbon or alloy components..

This will help ensure that:

1. The seat post is cut properly.
2. The seat post adjustment range in the frame is correct and the saddle height fits you.
3. The seat post is correctly re-marked with its "MINIMUM INSERT."

YOU CAN BE SEVERELY INJURED, PARALYZED OR KILLED IF YOU IGNORE THIS WARNING.

1. The seat post is cut properly.
2. The seat post adjustment range in the frame is correct and the saddle height fits you.
3. The seat post is correctly re-marked with its "MINIMUM INSERT."

Shifting Gears

Your multi-speed bicycle will have a derailleur drivetrain (see 1. below),

1. How a derailleur drivetrain works

If your bicycle has a derailleur drivetrain, the gear-changing mechanism will have:

- a rear cassette or freewheel sprocket cluster
- a rear derailleur
- a shifter
- a front sprockets called a chainring
- a drive chain

a. Shifting Gears

There are two different types of shifting controls: twist grips, or triggers.

Refer to the component manufacture manuals supplied with your bike to determine which type of shifting controls you have and for instructions on how to use them.

The vocabulary of shifting can be pretty confusing. A downshift is a shift to a “lower” or “slower” gear, one which is easier to pedal. An upshift is a shift to a “higher” or “faster”, harder to pedal gear.

The way to keep things straight is to remember that shifting the chain in towards the center line of the bike is for accelerating and climbing and is called a downshift. Moving the chain out or away from the centerline of the bike is for speed and is called an upshift.

Whether upshifting or downshifting, the bicycle derailleur system design requires that the drive chain be moving forward and be under at least some tension. A derailleur will shift only if you are pedaling forward.



CAUTION

Never move the shifter while pedaling backward, nor pedal backwards immediately after having moved the shifter. This could jam the chain and cause serious damage to the bicycle.

 CAUTION

Shifting under extreme pedaling pressure puts a great amount of stress on components. While most components can withstand an occasional “power shift,” continual power shifting will most assuredly damage some part of your drivetrain. Whenever possible, ease up on your pedals when shifting.

b. Shifting the Rear Derailleur

The rear derailleur is controlled by the right shifter.

The function of the rear derailleur is to move the drive chain from one gear sprocket to another. The smaller sprockets on the gear cluster produce higher gear ratios. Pedaling in the higher gears requires greater pedaling effort, but takes you a greater distance with each revolution of the pedal cranks. The larger sprockets produce lower gear ratios. Using them requires less pedaling effort, but takes you a shorter distance with each pedal crank revolution. Moving the chain from a smaller sprocket of the gear cluster to a larger sprocket results in a downshift. Moving the chain from a larger sprocket to a smaller sprocket results in an upshift. In order for the derailleur to move the chain from one sprocket to another, the rider must be pedaling forward.

c. Which gear should I be in?

It is not necessary to shift gears in sequence. Instead, find the “starting gear” which is right for your level of ability — a gear which is hard enough for quick acceleration but easy enough to let you start from a stop without wobbling — and experiment with upshifting and downshifting to get a feel for the different gear combinations.

At first, practice shifting where there are no obstacles, hazards or other traffic, until you’ve built up your confidence.

Learn to anticipate the need to shift, and shift to a lower gear before the hill gets too steep. If you have difficulties with shifting, the problem could be mechanical adjustment. See a bicycle dealer for help.

d. What if it won't shift gears?

If moving the shift control one click repeatedly fails to result in a smooth shift to the next gear chances are that the mechanism is out of adjustment. Take the bike to a professional bicycle mechanic to have it adjusted.

**WARNING**

Never shift a derailleur onto the largest or the smallest sprocket if the derailleur is not shifting smoothly.

The derailleur may be out of adjustment and the chain could jam, causing you to lose control and fall.

About Pedals

Charge bikes come with simple flat pedals.

As customers may choose to fit other types of pedals, we have provided the information below:

1. Toe Overlap is when your toe can touch the front wheel when you turn the handlebars to steer while a pedal is in the forward most position. This is common on small-framed bicycles, and is avoided by keeping the inside pedal up and the outside pedal down when making sharp turns. This technique will also prevent the inside pedal from striking the ground in a turn.



WARNING

Toe overlap could cause you to lose control and fall. Pedal overlap results from a combination of frame size, crank arm length, pedal design and shoes you will use while riding.

Whether you have overlap or not, you must keep the inside pedal up and the outside pedal down when making sharp turns.

2. Some bicycles come equipped with pedals that have sharp and potentially dangerous surfaces. These surfaces are designed to add safety by increasing grip between the rider's shoe and the pedal.

If your bicycle has this type of high-performance pedal, you must take extra care to avoid serious injury from the pedals' sharp surfaces. Based on your riding style or skill level, you may prefer a less aggressive pedal design, or chose to ride with shin pads. A bicycle dealer can show you a number of options and make suitable recommendations.

3. Toeclips and straps are a means to keep feet correctly positioned and engaged with the pedals. The toeclip positions the ball of the foot over the pedal spindle, which gives maximum pedaling power.

The toe strap, when tightened, keeps the foot engaged throughout the rotation cycle of the pedal.

While toeclips and straps give some benefit with any kind of shoe, they work most effectively with cycling shoes designed for use with toeclips. A bicycle dealer can explain how toeclips and straps work. Shoes with deep treaded soles or welts which might allow the foot to be trapped should not be used with toeclips and straps.

 WARNING

Getting into and out of pedals with toeclips and straps requires skill which can only be acquired with practice.

Until it becomes a reflex action, the technique requires concentration which can distract your attention and cause you to lose control and fall.

Practice the use of toeclips and straps where there are no obstacles, hazards or traffic. Keep the straps loose, and don't tighten them until your technique and confidence in getting in and out of the pedals warrants it. Never ride in traffic with your toe straps tight.

4. Clipless pedals (sometimes called "step-in pedals") are another means to keep feet securely in the correct position for maximum pedaling efficiency. They have a plate, called a "cleat," on the sole of the shoe, which clicks into a mating spring-loaded fixture on the pedal.

They only engage or disengage with a very specific motion which must be practiced until it becomes instinctive. Clipless pedals require shoes and cleats which are compatible with the make and model pedal being used.

5. Many clipless pedals are designed to allow the rider to adjust the amount of force needed to engage or disengage the foot. Follow the pedal manufacturer's instructions, or ask a bicycle dealer to show you how to make this adjustment. Use the easiest setting until engaging and disengaging becomes a reflex action, but always make sure that there is sufficient tension to prevent unintended release of your foot from the pedal.

 WARNING

Clipless pedals are intended for use with shoes specifically made to fit them and are designed to firmly keep the foot engaged with the pedal.

Do not use shoes which do not engage the pedals correctly.

NOTE: Practice is required to learn to engage and disengage the foot safely. Until engaging and disengaging the foot becomes a reflex action, the technique requires concentration which can distract your attention and cause you to lose control and fall. Practice engaging and disengaging clipless pedals in a place where there are no obstacles, hazards or traffic; and be sure to follow the pedal manufacturer's setup and service instructions. If you do not have the manufacturer's instructions, see a bicycle dealer or contact the manufacturer.

Toe Overlap or Toe Clip Overlap

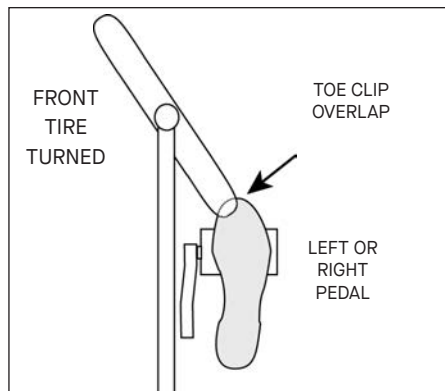


Figure 20.

What is It?

What is It? “Toe overlap” or “Toe clip overlap” describes the toe of your shoe, your shoe attached to a clipless pedal or your toe clip contacting the front tire (or front fender). This may occur when a pedal is all the way forward and the front wheel is turned sharply to a position where the toe or toe clip can contact the tire (or fender). If you ride with clipless pedals, attach your riding shoes to the pedals and check for front tire clearance. If you ride with toe clips, check for front tire clearance.

“Toe clip overlap” is common on small frame size bicycles. It is simple to avoid any contact with the front tire: have the inside pedal up before beginning a turn. As you turn to the left, the inside (left) pedal should be positioned at twelve o'clock. As you turn to the right, the inside (right) pedal should be positioned at twelve o'clock. Having the inside pedal up will prevent any toe clip-to-tire contact and maximize cornering ground clearance. Learn to make it your habit on any sized bike.

Whether or not you have overlap, or how much overlap you have can be changed. Be aware that toe clearance can be increased or decreased by changes in crank arm length, size of pedals or toe clips used, size of tires used, addition of fenders, size/design of shoes worn.

WARNING

Toe clip overlap could cause you to lose control of your bike, fall and be seriously injured, paralyzed or killed.

Please consult with a bicycle dealer on the simple steps you must follow to avoid an accident. Insist that a bicycle dealer work with you to determine if your own combination of bicycle, shoes, and components have this common design feature.

About Bicycle Suspension

Many bicycles are equipped with suspension systems. There are many different types of suspension systems — too many to deal with individually in this Manual. If your bicycle has a suspension system of any kind, be sure to read and follow the suspension manufacturer's setup and service instructions. If you do not have the manufacturer's instructions, see a bicycle dealer or contact the manufacturer.

WARNING

Failure to maintain, check and properly adjust the suspension system may result in suspension malfunction, which may cause you to lose control and fall.

If your bike has suspension, the increased speed you may develop also increases your risk of injury. For example, when braking, the front of a suspended bike dips. You could lose control and fall if you do not have experience with this system. Learn to handle your suspension system safely. See also Riding Safety "About Bicycle Suspension".

WARNING

Changing suspension adjustment can change the handling and braking characteristics of your bicycle.

Never change suspension adjustment unless you are thoroughly familiar with the suspension system manufacturer's instructions and recommendations, and always check for changes in the handling and braking characteristics of the bicycle after a suspension adjustment by taking a careful test ride in a hazard-free area.

Suspension can increase control and comfort by allowing the wheels to better follow the terrain. This enhanced capability may allow you to ride faster; but you must not confuse the enhanced capabilities of the bicycle with your own capabilities as a rider. Increasing your skill will take time and practice. Proceed carefully until you have learned to handle the full capabilities of your bike.

WARNING

Not all bicycles can be safely retrofitted with some types of suspension systems. Before retrofitting a bicycle with any suspension, check with the bicycle's manufacturer to make sure that what you want to do is compatible with the bicycle's design. Failing to do so can result in catastrophic frame failure.

About Bicycle Tires & Tubes

About Bicycle Tires

Bicycle tires are available in many designs and specifications, ranging from general-purpose designs to tires designed to perform best under very specific weather or terrain conditions. If, once you've gained experience with your new bike, you feel that a different tire might better suit your riding needs, a bicycle dealer can help you select the most appropriate design.

Determining and Regulating Correct Tire Pressure

The size, pressure rating, and on some high-performance tires the specific recommended use, are marked on the sidewall of the tire (see fig. 17). The part of this information which is most important to you is Tire Pressure. But some wheel rim manufacturers also specify maximum tire pressure with a label on the rim.

WARNING

Never inflate a tire beyond the maximum pressure marked on the tire's sidewall or the wheel rim.

If the maximum pressure rating for the wheel rim is lower than the maximum pressure shown on the tire, always use the lower rating. Exceeding the recommended maximum pressure may blow the tire off the rim or damage the wheel rim, which could cause damage to the bike and injury to the rider and bystanders.

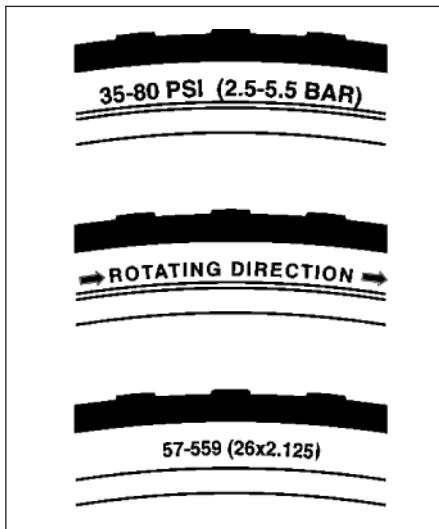


Figure 17.

The best and safest way to inflate a bicycle tire to the correct pressure is with a bicycle pump which has a built-in pressure gauge.

 WARNING

There is a safety risk in using gas station air hoses or other air compressors.

They are not made for bicycle tires. They move a large volume of air very rapidly, and will raise the pressure in your tire very rapidly, which could cause the tube to explode.

Tire pressure is given either as maximum pressure or as a pressure range. How a tire performs under different terrain or weather conditions depends largely on tire pressure. Inflating the tire to near its maximum recommended pressure gives the lowest rolling resistance; but also produces the harshest ride. High pressures work best on smooth, dry pavement.

Very low pressures, at the bottom of the recommended pressure range, give the best performance on smooth, slick terrain such as hard-packed clay, and on deep, loose surfaces such as deep, dry sand.

Tire pressure that is too low for your weight and the riding conditions can cause a puncture of the tube by allowing the tire to deform sufficiently to pinch the inner tube between the rim and the riding surface.

 CAUTION

Pencil type automotive tire gauges can be inaccurate and should not be relied upon for consistent, accurate pressure readings. Instead, use a high quality dial gauge.

Ask a bicycle dealer to recommend the best tire pressure for the kind of riding you will most often do, and have the dealer inflate your tires to that pressure. Then, check inflation by putting one hand on the saddle, one on the intersection of the handlebars and stem, then bouncing your weight on the bike while looking at tire deflection so you'll know how correctly inflated tires should look and feel when you don't have access to a gauge.

Some tires may need to be brought up to pressure every week or two. So, it is important to check your tire pressures before every ride.

Some special high-performance tires have unidirectional treads: their tread pattern is designed to work better in one direction than in the other. The sidewall marking of a unidirectional tire will have an arrow showing the correct rotation direction. If your bike has unidirectional tires, be sure that they are mounted to rotate in the correct direction.

Tire Size

WARNING

Mounting the wrong size tires can result in the tires hitting the fork or frame when riding. If this happens, you can lose control of your bike and you can be thrown off, a moving tire can be stopped because it touches the fork or frame.

Do not mount oversized tires, ones that rub or hit the fork or frame, ones that result in too little clearance, or ones that can hit the fork or frame, saddles, seat post, or seat post clamps when the suspension is fully compressed or when riding.

Take care that the tires you select are compatible with your bike's fork or frame design. Also, be sure to follow the manufacturer's recommendations of your front fork and rear shocks.

When you are considering tires for your bike consider...

The actual measured size of a tire may be different than its sidewall marking.

Each time you mount a new tire, take the time to inspect the actual clearance between the rotating tire and all parts of the frame. The U.S. Consumer Product Safety Commission (CPSC) requires at least 1/16" (1.6 mm) tire clearance from any part of the bike. Allowing for lateral rim flex and a wheel or rim that is out-of-true will likely mean choosing a rear tire that provides even more clearance than the CPSC recommends.

Ask a professional bicycle mechanic about the right tires for your bike and its particular components!

You can be severely injured, paralyzed or killed in an accident if you ignore this warning.

Tire & Rim Pressure Compatibility

WARNING

Maximum tire pressure may be limited by rim design.

1. ALWAYS check both tire sidewall and rim pressure markings.
2. NEVER inflate tire above maximum rim pressure.

In the rapidly evolving area of disc brake specific, light-weight and carbon fiber rims, some rim manufacturers have specified maximum tire pressure.

Of course a customer might choose any tire, and a tire may have a maximum pressure listed on the sidewall that is higher than the maximum pressure listed on the rim. You must never exceed the maximum air pressure marked on the rim.

Excess pressure could lead to rim failure, and an accident, with risk of serious injury, paralysis or death. If you have any doubt or question, contact the rim manufacturer or insist that a bicycle dealer contact the rim manufacturer.

Types of Air Valves

There are primarily two kinds of bicycle tube valves: The Schrader Valve and the Presta Valve. The bicycle pump you use must have the fitting appropriate to the valve stems on your bicycle.

The Schrader valve (fig. 18) is like the valve on a car tire. To inflate a Schrader valve tube, remove the valve cap and clamp the pump fitting onto the end of the valve stem. To let air out of a Schrader valve, depress the pin in the end of the valve stem with the end of a key or other appropriate object.

The Presta valve (fig. 18) has a narrower diameter and is only found on bicycle tires. To inflate a Presta valve tube using a Presta headed bicycle pump, remove the valve cap; unscrew (counterclockwise) the valve stem lock nut; and push down on the valve stem to free it up. Then push the pump head on to the valve head, and inflate. To inflate a Presta valve with a Schrader pump fitting, you'll need a Presta adapter (available at a bicycle dealer) which screws on to the valve stem once you've freed up the valve. The adapter fits into the Schrader pump fitting. Close the valve after inflation. To let air out of a Presta valve, open up the valve stem lock nut and depress the valve stem.

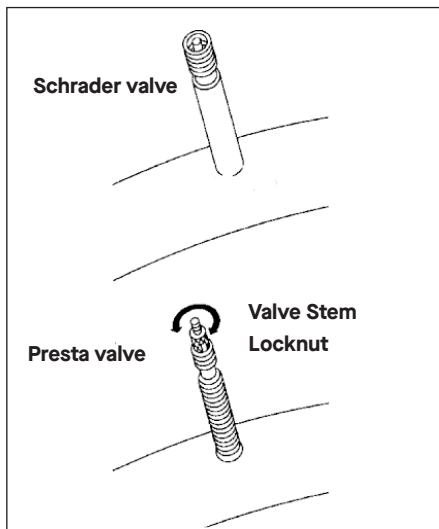


Figure 18.



WARNING

We highly recommend that you carry a spare inner tube when you ride your bike.

Patching a tube is an emergency repair.

If you do not apply the patch correctly or apply several patches, the tube can fail, resulting in possible tire failure, which could cause you to lose control and fall. Replace a patched tube as soon as possible.

About Changing Components Or Adding Accessories

There are many components and accessories available to enhance the comfort, performance and appearance of your bicycle. However, if you change components or add accessories, you do so at your own risk. The bicycle's manufacturer may not have tested that component or accessory for compatibility, reliability or safety on your bicycle.

Before installing any component or accessory, including but not limited to a different size tire, a lighting system, a luggage rack, a child seat, a trailer, etc., make sure that it is compatible with your bicycle.

Be sure to read, understand and follow the instructions that accompany the products you purchase for your bicycle.

Be sure to read, understand and follow the instructions that accompany the products you purchase for your bicycle.

See also "Intended Use" and "Inspect For Safety."

WARNING

Failure to confirm compatibility, properly install, operate and maintain any component or accessory can result in serious injury or death.

WARNING

Exposed springs on the saddle of any bicycle fitted with a child seat can cause serious injury to the child.

WARNING

Changing the components on your bike with other than genuine replacement parts compromise the safety of your bicycle and may void the warranty.

About Using Bicycle Racks on Cars

Bicycle automobile racks are available from many different manufacturers and many different rack designs exist. They are convenient devices to transport your bike. However, any bicycle rack has the potential to seriously damage your bicycle. Damage can occur immediately due to some aspect of an incompatible or poor rack design. Damage can occur after repeated mounting, and dismounting. Damage can also happen while the bike is being transported in the rack. We can't cover all the possible ways in which a rack can cause damage to your bike.

WARNING

READ AND FOLLOW THE RACK MANUFACTURER'S INSTRUCTIONS BEFORE MOUNTING TO YOUR BIKE.

Both carbon and aluminum frames and forks can be damaged (crushed, cracked, or dented) by the clamps and support systems of a bike rack. Both carbon and aluminum can suffer serious abrasion damage by the movement of the bike in the rack during transport. All damage to your bike is very serious, that is why you must take extra care when choosing a bike rack and when actually mounting your bike in the rack.

WHEN MOUNTING YOUR BIKE ON A RACK:

- Remove all bags, panniers, water bottles etc. To minimize wind resistance, loading, and avoid chafing damage.

Ask a professional bicycle mechanic for help choosing and using a bike rack.

See the table on the following page for more rack information.

CAUTION

WHEN USING A RACK WITH FORK DROPOUT CLAMPS:

- Make sure that both fork dropouts are engaged in the rack before clamping.
- Make sure both dropouts are clamped with equal force. If only one dropout is engaged and the bike tips over, the leverage can exert great force that may damage the dropout.
- If your bike tips over, have the dropouts examined by a professional bike mechanic.

Types of Car Racks

TYPE OF RACK DESIGN	RECOMMENDATION & CAUTIONS
CLAMPS ON TIRES / WHEELS ONLY This type does not use clamps on any other part of the frame or fork.	Suitable for both carbon and aluminum frames This is the best system design because there is no potential cracking or crushing damage to the frame or fork. Chafing wear is avoided.
FLOATING FORK MOUNT & REAR WHEEL TRAY This design functions exactly as a quick release on your bike. The rear wheel is clamped in a tray. No other clamps are used on any other part of the frame.	Suitable for both carbon and aluminum frames Be sure quick release on rack is properly adjusted and tightly closed. The Thule Echelon with ETC Equalized Twin Cam is suitable as it has an axle floating mechanism, like a standard quick release.
WHEEL CLAMPS & UPRIGHT ARM CLAMP In this design, wheels are clamped in a wheel tray and the bicycle is held upright by an arm clamping the downtube.	Do not use on bikes with carbon fiber downtubes. When clamp is tightened the carbon downtube can be broken. When clamp is looser, chafing can cause structural wear. A loose clamp can allow movement and possible chafing damage. Clean the clamping area to eliminate abrasive particles, pad the clamping area and properly tighten the clamp.
NON-FLOATING FORK MOUNT & REAR WHEEL TRAY With this type, a mechanism pulls the two sides of the fork in at the same time, and pulls both sides in the same distance. Example: Thule Peloton.	Not recommended for either carbon or aluminum bikes. If one dropout is slightly thicker than the other dropout, all the clamping force is applied to the thicker dropout. The high force on the one thicker dropout may crack a carbon dropout. The thinner dropout may move in the rack causing wear and abrasion. The fork blade attached to the thicker dropout takes most of the loads caused by 70 mile per hour wind and bumps. The result may be damage to your fork.
HANGER RACK On this type the bicycle hangs on two arms projecting aft from a trunk mounted rack	Not recommended for either carbon or aluminum bikes. Do not use on bikes with carbon fiber tubes. The point loading where the arms contact the underside of the tubes may crack the tubes. Additionally the lower part of the bike is difficult to secure, and it may move, causing chafing and structural wear. Additionally when two bikes are mounted on these racks the contact points between the bikes may be cracked or chafed, causing structural damage.

About Using Water Bottles

Side impacts to a water bottle or cage can result in damage threaded inserts due to the leverage on a very small area. In a crash, certainly the last thing you should be worried about is saving the threaded inserts in your frame. However, when you are storing or transporting your bike, take steps to prevent situations where a water bottle may be hit or bumped by a strong force that would cause damage. Remove bottle and cage when you are packing your bike for travel.

Periodically check the attachment of the bottle cage; tighten the cage bolts if necessary. Don't ride with a loose bottle cage. Riding with loose cage bolts can produce a rocking motion or vibration of the attached cage.

A loose cage will damage the insert and possibly lead to the inserts to pull out. It may be possible to repair a loose insert, or install another insert only if the frame is undamaged. Replacement requires the use of a special tool. If you notice damage to the threaded insert, please ask a professional bicycle mechanic for help.



CAUTION

WATER BOTTLES - An impact, crash, or loose bottle cage can result in damage to your frame. This kind of damage is not covered by the Limited Warranty.

Inspect For Safety

Nothing Lasts Forever, Including Your Bike

When the useful life of your bike or its components is over, continued use is hazardous.

Every bicycle and its component parts have a finite, limited useful life. The length of that life will vary with the construction and materials used in the frame and components; the maintenance and care the frame and components receive over their life; and the type and amount of use to which the frame and components are subjected. Use in competitive events, trick riding, ramp riding, jumping, aggressive riding, riding on severe terrain, riding in severe climates, riding with heavy loads, commercial activities and other types of non-standard use can dramatically shorten the life of the frame and components. Any one or a combination of these conditions may result in an unpredictable failure.

All aspects of use being identical, lightweight bicycles and their components will usually have a shorter life than heavier bicycles and their components. In selecting a lightweight bicycle or components you are making a trade-off, favoring the higher performance that comes with lighter weight over longevity. So, If you choose lightweight, high performance equipment, be sure to have it inspected frequently.

You should have your bicycle and its components checked periodically by a qualified bicycle mechanic for indicators of stress and/or potential failure, including cracks, deformation, corrosion, paint peeling, dents, and any other indicators of potential problems, inappropriate use or abuse. These are important safety checks and very important to help prevent accidents, bodily injury to the rider and shortened product life.

Perspective

Today's high-performance bicycles require frequent and careful inspection and service. In this section we try to explain some underlying material science basics and how they relate to your bicycle. We discuss some of the trade-offs made in designing your bicycle and what you can expect from your bicycle; and we provide important, basic guidelines on how to maintain and inspect it.

We cannot teach you everything you need to know to properly inspect and service your bicycle; and that is why we repeatedly urge you to take your bicycle to a qualified bicycle mechanic for professional care and attention.

Importance of Frequent Inspection

WARNING

Frequent inspection of your bike is important to your safety. Follow the Pre-Ride Checklist before every ride.

More detailed periodic inspection of your bicycle is important. How often this more detailed inspection is needed depends upon you.

You, the rider/owner, have control and knowledge of how often you use your bike, how hard you use it and where you use it. Because a bicycle mechanic cannot track your use, you must take responsibility for periodically bringing your bike to a qualified bicycle mechanic for inspection and service. This mechanic will help you decide what frequency of inspection and service is appropriate for how and where you use your bike.

For your safety, understanding and communication with a qualified bicycle mechanic we urge you to read this section of the manual in its entirety. The materials used to make your bike determine how and how frequently to inspect.

Ignoring this warning can lead to frame, fork or other component failure, which can result in serious injury or death.

Properties of Metals

Please understand that there is no simple statement that can be made that characterizes the use of different metals for bicycles. What is true is how the metal chosen is applied is much more important than the material alone. One must look at the way the bike is designed, tested, manufactured, supported along with the characteristics of the metal rather than seeking a simplistic answer.

Metals vary widely in their resistance to corrosion. Steel must be protected or rust will attack it. Aluminum and Titanium quickly develop an oxide film that protects the metal from further corrosion. Both are therefore quite resistant to corrosion. Aluminum is not perfectly corrosion resistant, and particular care must be used where it contacts other metals and galvanic corrosion can occur.

Metals are comparatively ductile. Ductile means bending, buckling and stretching before breaking. Generally speaking, of the common bicycle frame building materials steel is the most ductile, titanium less ductile, followed by aluminum.

Metals vary in density. Density is weight per unit of material. Steel weighs 7.8 grams/cm³ (grams per cubic centimeter), titanium 4.5 grams/cm³, aluminum 2.75 grams/cm³. Contrast these numbers with carbon fiber composite at 1.45 grams/cm³.

Metals are subject to fatigue. With enough cycles of use, at high enough loads, metals will eventually develop cracks that lead to failure. It is very important that you read the basics of metal fatigue below.

Let's say you hit a curb, ditch, rock, car, another cyclist or other object. At any speed above a fast walk, your body will continue to move forward, momentum carrying you over the front of the bike. You cannot and will not stay on the bike, and what happens to the frame, fork and other components is irrelevant to what happens to your body.

What should you expect from your metal frame?

It depends on many complex factors, which is why we tell you that crash worthiness cannot be a design criteria. With that important note, we can tell you that if the impact is hard enough the fork or frame may be bent or buckled. On a steel bike, the steel fork may be severely bent and the frame undamaged. Aluminum is less ductile than steel, but you can expect the fork and frame to be bent or buckled. Hit harder and the top tube may be broken in tension and the down tube buckled. Hit harder and the top tube may be broken, the down tube buckled and broken, leaving the head tube and fork separated from the main triangle.

Understanding Metals

Steel is the traditional material for building bicycle frames. It has good characteristics, but in high performance bicycles, steel has been largely replaced by aluminum and some titanium. The main factor driving this change is interest in lighter bicycles by cycling enthusiasts.

When a metal bike crashes, you will usually see some evidence of this ductility in bent, buckled or folded metal. It also is now common for the main frame and other bicycle components to be made from composite materials, also called carbon fiber components. See “Understanding Composites.”

The relative ductility of metals and the lack of ductility of carbon fiber means that in a crash scenario you can expect some bending or bucking in the metal but none in the carbon. Below some load the carbon fork may be intact even though the frame is damaged. Above some load the carbon fork will be completely broken.

One can design a part that is so strong that fatigue life is nearly infinite. This requires a lot of material and a lot of weight. Any structure that must be light and strong will have a finite fatigue life. Aircraft, race cars, motorcycles all have parts with finite fatigue lives. If you wanted a bicycle with an infinite fatigue life, it would weigh far more than any bicycle sold today. So we all make a trade off: the wonderful, lightweight performance we want requires that we inspect the structure.

The Basics of Metal Fatigue

Common sense tells us that nothing that is used lasts forever. The more you use something, and the harder you use it, and the worse the conditions you use it in, the shorter its life.

Fatigue is the term used to describe accumulated damage to a part caused by repeated loading. To cause fatigue damage, the load the part receives must be great enough.

A crude, often-used example is bending a paper clip back and forth (repeated loading) until it breaks. This simple definition will help you understand that fatigue has nothing to do with time or age. A bicycle in a garage does not fatigue. Fatigue happens only through use.

So what kind of “damage” are we talking about? On a microscopic level, a crack forms in a highly stressed area. As the load is repeatedly applied, the crack grows. At some point the crack becomes visible to the naked eye. Eventually it becomes so large that the part is too weak to carry the load that it could carry without the crack. At that point there can be a complete and immediate failure of the part.

A few things to think about:

ONCE A CRACKS STARTS IT CAN GROW AND GROW FAST.

Think about the crack as forming a pathway to failure. This means that any crack is potentially dangerous and will only become more dangerous. SIMPLE RULE 1: If you find crack, replace the part.

CORROSION SPEEDS DAMAGE.

Cracks grow more quickly when they are in a corrosive environment. Think about the corrosive solution as further weakening and extending the crack. SIMPLE RULE 2: Clean your bike, lubricate your bike, protect your bike from salt, remove any salt as soon as you can.

STAINS AND DISCOLORATION CAN OCCUR NEAR A CRACK.

Such staining may be a warning sign that a crack exists. SIMPLE RULE 3: Inspect and investigate any staining to see if it is associated with a crack.

SIGNIFICANT SCRATCHES, GOUGES, DENTS OR SCORING CREATE STARTING POINTS FOR CRACKS.

Think about the cut surface as a focal point for stress (in fact engineers call such areas “stress risers,” areas where the stress is increased). Perhaps you have seen glass cut? Recall how the glass was scored and then broke on the scored line. SIMPLE RULE 4: Do not scratch, gouge or score any surface. If you do, pay frequent attention to this area or replace the part.

SOME CRACKS (particularly larger ones) MAY MAKE CREAKING NOISE AS YOU RIDE.

Think about such a noise as a serious warning signal. Note that a well-maintained bicycle will be very quiet and free of creaks and squeaks. SIMPLE RULE 5: Investigate and find the source of any noise. It may not be a crack, but whatever is causing the noise should be fixed before riding.

Fatigue Is Not A Perfectly Predictable Science

Fatigue is not a perfectly predictable science, but we can give you some general factors to help you determine how often you need to inspect (or have your retailer inspect) your bicycle.

The more you fit the “shorten product life” profile, the more frequent your need to inspect.

The more you fit the “lengthen product life” profile, the less frequent your need to inspect.

Factors Influencing Product Life

Factors that shorten product life: • Hard, harsh riding style • "Hits," crashes, jumps, other "shots" to bike • High mileage • Higher body weight • Stronger, more fit, more aggressive rider • Corrosive environment (wet, salt air, winter road salt, accumulated sweat) • Presence of abrasive mud, dirt, sand, soil in riding environment	Factors that lengthen product life: • Smooth, fluid riding style • No "hits," crashes, jumps, other "shots" to bike • Low mileage • Lower body weight • Less aggressive rider • Non-corrosive environment (dry, salt-free air) • Clean riding environment
---	---

 **WARNING**

Do not ride a bicycle or component with any crack, bulge or dent, even a small one. Riding a cracked frame, fork or component could lead to complete failure, with risk of serious injury or death.

Understanding Composites

The term “composites” refers to the fact that a part or parts are made up of different components or materials. You’ve heard the term “carbon fiber bike.” This really means “composite bike.” Any number of the components used on a bicycle can have composites.

Composites are typically a strong, light fiber in a matrix of plastic, molded to form a shape. Carbon composites are light relative to metals. Steel weighs 7.8 grams/cm³ (grams per cubic centimeter), titanium 4.5 grams/cm³, aluminum 2.75 grams/cm³. Contrast these numbers with carbon fiber composite at 1.45 grams/cm³.

The composites with the best strength-to-weight ratios are made of carbon fiber in a matrix of epoxy plastic. The epoxy matrix bonds the carbon fibers together, transfers load to other fibers, and provides a smooth outer surface. The carbon fibers are the “skeleton” that carries the load.

Why Are Composites Used?

Unlike metals, which have uniform properties in all directions (engineers call this isotropic), carbon fibers can be placed in specific orientations to optimize the structure for particular loads. The choice of where to place the carbon fibers gives engineers a powerful tool to create strong, light bicycles. Engineers may also orient fibers to suit other goals such as comfort and vibration damping.

Carbon fiber composites are very corrosion resistant, much more so than most metals.

Think about carbon fiber or fiberglass boats.

Carbon fiber materials have a very high strength-to-weight ratio.

What Are The Limits Of Composites?

Well designed “composite” or carbon fiber bicycles and components have long fatigue lives, usually better than their metal equivalents. While fatigue life is an advantage of carbon fiber, you must still regularly inspect your carbon fiber frame, fork, or components.

Carbon fiber composites are not ductile. Once a carbon structure is overloaded, it will not bend; it will break. At and near the break, there will be rough, sharp edges and maybe delamination of carbon fiber or carbon fiber fabric layers. There will be no bending, buckling, or stretching.

What Are The Limits Of Composites?

Well designed “composite” or carbon fiber bicycles and components have long fatigue lives, usually better than their metal equivalents.

While fatigue life is an advantage of carbon fiber, you must still regularly inspect your carbon fiber frame, fork, or components.

Carbon fiber composites are not ductile. Once a carbon structure is overloaded, it will not bend; it will break. At and near the break, there will be rough, sharp edges and maybe delamination of carbon fiber or carbon fiber fabric layers. There will be no bending, buckling, or stretching.

Crash Damage : Composites

Let's say you hit a curb, ditch, rock, car, other cyclist or other object. At any speed above a fast walk, your body will continue to move forward, the momentum carrying you over the front of the bike. You cannot and will not stay on the bike and what happens to the frame, fork and other components is irrelevant to what happens to your body.

What should you expect from composites? It depends on many complex factors. But we can tell you that if the impact is hard enough, the fork or frame or component may be completely broken.

Remember the significant difference in behavior between metals and composites? Metals bend, composites break. Even if the composite was twice as strong compared with metal, a composite is overloaded it will not bend, it will break completely.

Composites Inspection: Finding Evidence of Damage

Cracks:

Inspect for cracks, broken, or splintered areas. Any crack is serious. Do not ride any bicycle or component that has a crack of any size.

Delamination:

Delamination is serious damage. Composites are made from layers of fabric. Delamination means that the layers of fabric are no longer bonded together. Do not ride any bicycle or component that has any delamination. These are some delamination clues:

1. A cloudy or white area. This kind of area looks different from the ordinary undamaged areas. Undamaged areas will look glassy, shiny, or “deep,” as if one was looking into a clear liquid. Delaminated areas will look opaque and cloudy.
2. Bulging or deformed shape. If delamination occurs, the surface shape may change. The surface may have a bump, a bulge, soft spot, or not be smooth and fair.
3. A difference in sound when tapping the surface. If you gently tap the surface of an undamaged composite you will hear a consistent sound, usually a hard, sharp sound. If you then tap a delaminated area, you will hear a different sound, usually duller, less sharp.

Unusual Noises:

Either a crack or delamination can cause creaking noises while riding. Think about such a noise as a serious warning signal. A well-maintained bicycle will be very quiet and free of creaks and squeaks. Investigate and find the source of any noise. It may not be a crack or delamination, but whatever is causing the noise must be fixed or replaced before riding



WARNING

Do not ride your bike bicycle or with a damaged composite component Riding a cracked or delaminated could lead to complete failure, with risk of serious injury or death.

Understanding Bicycle Components

Original Equipment Components

Bicycle and component manufacturers tests the fatigue life of the components that are original equipment on your bike. This means that they have met test criteria and have reasonable fatigue life. It does not mean that the original components will last forever. They won't.

Aftermarket Components

Think carefully about your rider profile as outlined in "Factors Influencing Product Life."

The more you fit the "shorten product life" profile, the more you must question the use of super light components.

The more you fit the "lengthen product life" profile, the more likely it is that lighter components may be suitable for you. Discuss your needs and your profile very honestly with a bicycle dealer.

Take these choices seriously and understand that you are responsible for the changes.

A useful slogan to discuss with a bicycle dealer if you contemplate changing components is asking what is the expected performance character of the change contemplated :a strong component, a light component, an inexpensive component. "Pick only two" The third characteristic is the one traded-off.

Inspection of Components



WARNING

It is often necessary to remove and disassemble components in order to properly and carefully inspect them. This is a job for a professional bicycle mechanic with the special tools, skills and experience to inspect and service today's high-tech high-performance bicycles and their components.

Inspecting Handlebars

Remove from stem. With road bars, you will need to remove the handlebar tape. Remove any handlebar mounted components. Clean and inspect carefully for cracks. Pay particular attention to the area where the handlebar emerges from the stem. This is the area where virtually all handlebars will eventually break. Periodic replacement of all handlebars is strongly recommended. How often they need to be replaced depends upon the many factors outlined above.

Be sure that you do not scratch or score the surface of the handlebars with either the stem or the brake or shifter levers. As noted above, any such damage will reduce the life of the handlebar and could lead to breakage.

If you find that there is a sharp edge or burr on the inside of the stem, right where the handlebars emerge, it must be smoothed out with fine sandpaper (220 grit or finer) before the new handlebars are installed. Such a sharp edge or burr could cause a scratching or scoring of the handlebar. As noted above, any such damage will reduce the life of the handlebar and could lead to breakage.

Inspecting & Servicing Seat Posts

Remove from seat tube and remove from saddle. Disassemble the head/saddle clamp assembly. Clean and inspect all parts carefully for cracks.

Pay particular attention to the bolt (or bolts) that clamp the saddle in place. If the bolt looks stretched, bent or in any way damaged, replace it. Note that these bolts have been known to be broken due to fatigue when not properly tightened. They must be tightened with a torque wrench.

The threads of the seat post bolts should be greased before reassembly.

Be sure the clamp assembly is clamped only to the straight parallel part of the saddle rails.

Clean and apply the following to a seat post before inserting into the frame.

Frame Material		Seat Post
Seat Tube	Seat Post	Lubrication
Alloy	Alloy	Grease
Alloy	Carbon	Carbon Gel
Carbon	Alloy	Carbon Gel
Carbon	Carbon	Carbon Gel

GREASE - A high-quality bicycle bearing grease

CARBON GEL - Is a gel like lubricant formulated for use with carbon fiber components

Inspecting a Saddle

While the saddle is off the seat post, clean and inspect the rails carefully for cracks. Check the saddle rails to the saddle body; make sure that the rails are firmly attached.

Inspecting Pedals

Remove both from the crankset. Clean and inspect carefully for cracks. Pay particular attention to the pedal axle. See clipless pedal manufacturer's instructions for information on cleat wear and replacement.

Inspecting a Crankset

Remove both sides from the bottom bracket. Clean and inspect all parts carefully for cracks. Examine both inside and outside surfaces. Pay particular attention to edges, shapes and changes of shape that are a part of your particular crankset design. Also check the area around the pedal mounting holes.

Inspecting Wheels

Clean the wheels. Inspect the hub flange, where the heads of the spokes are hooked (or otherwise attached) to the hub flange, for cracks. Inspect the rim where the spokes meet the rim. It is not uncommon to see cracks form where the spokes meet the rim.



WARNING

Do not ride on a rim that has been worn out!

If the wear indicator shows that the rim is worn out, there is a danger that the rim could be broken due to tire pressure and/or riding loads.

If the rim breaks while you are riding you could have an accident, with risk of serious injury, paralysis or death.

Maintenance

Importance of a Maintenance Routine

WARNING

1. Regular Maintenance is important to your safety and the longevity of your bicycle. Any part of a poorly maintained bike can break or malfunction leading to an accident.

While the materials and workmanship of your bicycle or of individual components may be covered by a warranty for a specified period of time by the manufacturer, this is no guarantee that the product will last the term of the warranty. Product life is often related to the kind of riding you do and to the treatment to which you submit the bicycle. The bicycle's warranty is not meant to suggest that the bicycle cannot be broken or will last forever. It only means that the bicycle is covered subject to the terms of the warranty.

Ask a professional bicycle mechanic to help you develop a complete maintenance program, a program which includes a list of the parts on your bike for YOU to check regularly.

2. All bicycles and bicycle components are subject to wear and stress. Different materials and mechanisms wear or fatigue from stress at different rates and have different life cycles. If a component's life cycle is exceeded, the component can suddenly and catastrophically fail, causing serious injury or death to the rider. Scratches, cracks, fraying and discoloration are signs of stress-caused fatigue and indicate that a part is at the end of its useful life and needs to be replaced. See also "inspect For Safety" in this manual.

YOU CAN BE SEVERELY INJURED, PARALYZED OR KILLED IN AN ACCIDENT IF YOU IGNORE THIS WARNING.

WARNING

Many bicycle service and repair tasks require special knowledge and tools.

Do not begin any adjustments or service on your bicycle until you have learned from a professional bicycle mechanic how to properly complete them. Improper adjustment or service may result in damage to the bicycle or in an accident which can cause serious injury or death.

Basics of a Good Maintenance Schedule

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

The following are examples of the type of service you should 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.

ALWAYS BEFORE EVERY RIDE:

Perform the “Pre-Ride Checklist” in this manual. If your bike fails the Mechanical Safety Check or the other Pre-Ride Checklist items, do not ride it until the problems are corrected.

AFTER THE FIRST FEW RIDES:

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 a professional bike mechanic. See also “Mechanical Safety Check.” This section will help you identify some things that need readjustment. But even if everything seems fine to you, it’s best to take your bike to a professional bicycle mechanic for a checkup after about 30 days.

Another way to judge when it’s time for the first checkup is to bring the bike in after three to five hours of hard off-road use, or about 10 to 15 hours of on-road or more casual off-road use. But if you think something is wrong with the bike, take it to a professional bicycle mechanic before riding it again.

AFTER EVERY LONG OR HARD RIDE:

If the bike has been exposed to water or grit; or at least every 100 miles: Clean the bike and lightly lubricate the chain’s rollers with a good quality bicycle chain lubricant. Wipe off excess lubricant with a lint-free cloth. Lubrication is a function of climate. Talk to a bicycle dealer about the best lubricants and the recommended lubrication frequency for your area.

(continued on the next page...)

(continued from the previous page...)

AFTER EVERY LONG OR HARD RIDE OR AFTER EVERY 10 TO 20 HOURS OF RIDING:

- Squeeze the front brake and rock the bike forward and back. Everything feel solid? If you feel a clunk with each forward or backward movement of the bike, you probably have a loose headset. Have a professional bicycle mechanic check it.
- Lift the front wheel off the ground and swing it from side to side. Feel smooth? If you feel any binding or roughness in the steering, you may have a tight headset. Have a professional bicycle mechanic check it.
- Grab one pedal and rock it toward and away from the center line of the bike; then do the same with the other pedal. Anything feel loose? If so, have a professional bicycle mechanic check it.
- Take a look at the brake pads. Starting to look worn or not hitting the wheel rim squarely? Time to have a professional bicycle mechanic adjust or replace them.
- Carefully check the control cables and cable housings. Any rust? Kinks? Fraying? If so, have a professional bicycle mechanic replace them.
- Squeeze each adjoining pair of spokes on either side of each wheel between your thumb and index finger. Do they all feel about the same? If any feel loose, have a professional bicycle mechanic check the wheel for tension and trueness.
- Check the tires for excess wear, cuts or bruises. Have a professional bicycle mechanic replace them if necessary.
- Check the wheel rims for excess wear, dings, dents, and scratches. Consult your dealer if you see any rim damage.
- Check to make sure that all parts and accessories are still secure, and tighten any which are not.
- Check the frame, particularly in the area around all tube joints; the handlebars; the stem; and the seatpost for any deep scratches, cracks or discoloration. These are signs of stress-caused fatigue and indicate that a part is at the end of its useful life and needs to be replaced. See also "Inspect for Safety" in this manual.

EVERY 25 (HARD OFF-ROAD) TO 50 (ON-ROAD) HOURS OF RIDING:

Take your bike to a professional bicycle mechanic for a complete checkup.

Cleaning Your Bike

Use only water and dish washing liquid.

On suspension forks and shocks, cover adjustment knobs and air filter (if equipped) with a clean plastic bag secured temporarily with a rubber band or masking tape.

Before wiping away dirt, use an ordinary water hose to gently spray off heavy soils and dirt.

CAUTION

DO NOT power wash or spray water under high pressure to clean. Power washing will force contaminants into parts where they will promote corrosion, immediately damage, or result in accelerated wear.

DO NOT use compressed air to dry.

DO NOT use abrasive or harsh chemical cleaner/solvents which can damage the finish or attack and destroy both the outside and internal parts.

When rinsing, avoid directing the spray directly at shock/fork adjusters or bearings.

Importance of Lubrication

After cleaning your bike you should lubricate it. The chain should be lubricated. Consult with a bicycle dealer to choose from among the many types of lubricant products best suited to your climate and riding conditions. The pivot points on your derailleurs should be lubricated. The following parts and components may require lubrication depending on the manufacturer's instructions or recommendation of a professional bike mechanic:

- Drive Chain
- Pivot points - a small drop of oil to each pivot point and wipe off the excess.
- Derailleur cables
- Brake cables
- Brake pivots
- Headset bearings
- Bottom bracket bearings
- Hub bearings
- Freehub
- Seat post to seat tube
- Stem to steering tube

Bicycle Repair / Work Stands

The clamping jaws of a bike stand can generate a crushing force strong enough to seriously damage your frame. See next figure.

⚠ CAUTION

Never place your bike in a bike stand by clamping the frame.

Place your bike in a stand by extending the seat post and positioning the stand clamp on the extended seat post. Don't extend beyond the MINIMUM INSERT line marked on the seat post.

Since your carbon seat post can also be damaged by clamping force, adjust the stand clamp for the minimum clamping force needed to secure the bike.

Also, before clamping, clean the post and protect the seat post finish with a rag.

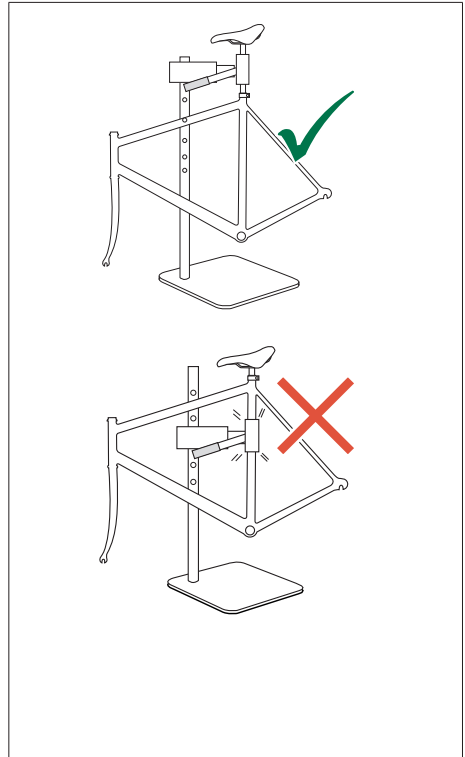


Figure Q

Tightening Torques

Correct tightening torque of various threaded fasteners on your bike is very important to your safety.

Always tighten fasteners to the correct torque. In case of a conflict between the instructions in this manual and information provided by a component manufacturer, consult with a qualified bicycle mechanic or the manufacturer's customer service representative for clarification.

Bolts that are too tight can stretch and deform.

Bolts that are too loose can move and fatigue.

Either mistake can lead to a sudden failure of the bolt.



Figure Charge torque tool - a pre-set torque wrench for specific indicated fasteners (not every fastener it fits)

Find Tightening Torque Information for Your Bike

The wide range of bicycle models and components used means that a listing of tightening torque would be out of date by the time it was published. Many fasteners should be installed with a thread locking adhesive such as Loctite ®

To determine correct tightening torque and any adhesive application for a fastener we ask you to check:

- Markings on the component. Many components are marked. On-product marking is becoming common.
- Torque specs in the component manufacturers instructions shipped with your bicycle.
- Torque specs listed on the websites of component manufacturers.
- With a qualified bicycle mechanic who has access to current and correct technical information.

WARNING

Always use a correctly calibrated torque wrench to tighten critical fasteners on your bike. Carefully follow the torque wrench manufacturer's instructions on the correct way to set and use the torque wrench for accurate results.

Limited One-Year Warranty

Every Charge bicycle comes with our 1-year limited warranty against defects in materials and workmanship.

What's Covered

Charge Bikes provides each original purchaser of a Charge bicycle a limited warranty against defects in materials and workmanship on the bicycle frame and components for a period of one year from the date of purchase. Specific components may come with additional warranties from the component manufacturers - please check in your owner's manual pack for information regarding these warranties. Shimano branded components are not covered under this warranty - bicycle owners should contact Shimano directly for warranty service on Shimano components.

Charge Bikes provides each original purchaser of other Charge Bikes branded products and accessories against defects in materials and workmanship for a period of one year from the date of purchase. Warranty coverage on other parts and accessories may be provided by that manufacturer.

What's Excluded

This warranty does not cover issues resulting from abuse, alteration, improper repair, failing to follow instructions in the owner's manual, corrosion or water damage, use of improper chargers or electrical surges, extreme or stunt riding, riding with excessively heavy loads, collision, or other abnormal, excessive, or improper use. This warranty does not cover bicycles used for commercial activities, including but not limited to bicycle rental, sharing, and delivery services.

Normal wear and tear on items (such as tires, tubes, brake pads, bearings, bushings, cables and housing, grips, chain, and spokes) is not covered under this warranty and should be regularly inspected and maintained as noted in the owner's manual. Paint fading caused by the effects of ultraviolet light (UV) or outdoor exposure is not covered by this warranty.

This warranty is limited to shipment of replacement parts. All labor services and charges are the responsibility of the original purchaser.

Warranty items will only be shipped within the continental United States, excluding Alaska.

How to Get Warranty Help

For warranty assistance, contact us by email or phone as listed below.

Call 833-482-3822

Email support@chargebikes.com

(continued on the next page...)

General Terms

This warranty extends from the date of purchase, is offered only to the original purchaser, and is not transferable. Proof of purchase may be required. This warranty is expressly limited to the replacement of a defective item, and all determinations under this warranty will be made in the sole discretion of Charge Bikes. All liability for any damage, failure or loss caused by unauthorized service or use of unauthorized parts is expressly disclaimed.

THE REMEDIES STATED ABOVE ARE THE EXCLUSIVE REMEDIES UNDER THIS WARRANTY. ANY AND ALL OTHER REMEDIES AND DAMAGES THAT MAY OTHERWISE BE APPLICABLE ARE EXCLUDED, INCLUDING, BUT NOT LIMITED TO, INCIDENTAL OR CONSEQUENTIAL DAMAGES, DAMAGES TO OTHER PROPERTY, OR ANY PUNITIVE DAMAGES. ANY WARRANTIES THAT MAY OTHERWISE BE IMPLIED BY LAW INCLUDING, BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, ARE EXCLUDED. PLEASE REFER TO THE DOCUMENTS INCLUDED WITH YOUR BICYCLE FOR POSSIBLE FURTHER RESTRICTIONS.

THIS LIMITED WARRANTY GIVES THE CONSUMER SPECIFIC LEGAL RIGHTS. THE CONSUMER MAY ALSO HAVE OTHER LEGAL RIGHTS WHICH VARY FROM STATE TO STATE OR COUNTRY TO COUNTRY. SOME STATES AND COUNTRIES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES OR WARRANTIES, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU. IF IT IS DETERMINED BY A COURT OF COMPETENT JURISDICTION THAT A CERTAIN PROVISION OF THIS LIMITED WARRANTY DOES NOT APPLY, SUCH DETERMINATION SHALL NOT AFFECT ANY OTHER PROVISION OF THIS LIMITED WARRANTY AND ALL OTHER PROVISIONS SHALL REMAIN IN EFFECT.

FCC Part 15 Compliance

Any changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer on an experienced radio/TV technician for help.

Pre-Ride Checklist

WARNING

Perform this pre-ride checklist before every ride. If you have any reason to suspect that your bicycle is not functioning properly, do not ride it.

Frequent checks are necessary to identify and correct problems that can lead to an accident. Do not ride your bike if it does not operate normally or has broken, damaged, or missing parts. Have any damage inspected and repaired by a professional bicycle mechanic before riding again.

You can be severely injured, paralyzed or killed in an accident if you ignore this warning.

Items to Check

1

Check your bicycle helmet, and all riding gear (i.e. protective glasses, gloves). Make sure all are in good condition. Wear appropriate shoes for pedaling. Make sure you are wearing appropriate clothing for the ride. Do not wear loose clothing of items that could become entangle in the bicycle. If your bicycle is equipped with racks, make sure all carry items are within the weight limits and secured properly on the racks.

2

Check the seatpost and handlebar stem. Make sure both are securely fastened. Twist the handlebars firmly from side to side while holding the front wheel between your knees. The stem must not move in the steering tube. Similarly, the seatpost must be secure inside the frame seat tube, so it cannot move or twist.

See "Folding Stem Instructions." See video at www.chargebikes.com.

3

Check wheels and tires. Are your wheels' properly fastened in the dropouts? Are they in good condition, no dents cracks or loose spokes? Be sure to read the section on proper operation installation of the wheels. See "About Wheels"

See video at www.chargebikes.com.

Check the tire pressures. Adjust tire pressure within the recommended range found on the tire sidewall. Make sure tires are undamaged in good condition. The tread should be within wear limits. See "Tires and Tubes."

4

Inspect your bike. See "Inspect for Safety" in this manual.

5

Are you visible to motorists? If you are riding at dusk, dawn or at night, you must make yourself visible to motorists. Use front and rear lights and a strobe or blinker. Reflectors alone do not provide adequate visibility. Wear reflective clothing.

See "Riding at Night, Dusk, Dawn."

If your E-bike is equipped with drive system operated lighting (i.e brake lights, headlights, and number plate illumination) , make sure these lights are each functioning normally. Make sure the number plate is clean and readable.

See "Bicycle Lights."

6

Is it raining or wet? If so, be more cautious. Your braking distances will increase, and your tires' grip on the road will decrease. Remember that motorists' visibility decreases with bad weather.

See "Wet Weather Riding."

(continued on next page...)

(continued from previous page...)

7

Are your wheels true? Lift each end of the bike and spin each wheel. Does the space between the brake disc and the brake pads, or the tire and the frame, remain nearly the same size as the wheel turns? Are your spokes tight?

See "About Wheels."

8

Check the brakes. Make sure both front and rear brakes are working well, functioning normally. Brake systems of E-bikes wear more quickly compared with pedal only bikes. This requires frequent inspection and replacement. Follow the instructions in the brake system manufacturer's manuals.

9

Confirm the drive chain/shifting is in good condition. The chain should be clean and well-lubricated. Chain wear of E-bikes is greater compared with pedal-only bikes. This requires frequent inspection and replacement. Make sure the bike shifts normally through all available gears. Test in a safe areas before riding out.

10

Inspect condition of exposed electrical wires and cables. There must not be any kinks, sharp bend or cuts present. You should see no signs of binding fraying stretching or abrasive wear occurring. Check cables/wires at dropout ends and frame attachment point. Wires and cables must not be in contact with any moving part of the bicycle or they may become damaged. The drive system or lighting can malfunction if this happens.

11

Do you have a full battery charge? Make sure the battery is fully charged, and mounted securely. Follow the drive system charging instructions. Battery charge and discharge capacity will decline with usage. Have an older battery replaced when it fails to charge in the time indicated, and operate the drive system as normally expected.

Test the drive-assist system, make sure the drive system functions normally.

See battery manufacturer's instructions.

Before every ride
read and follow the
Pre-Ride Checklist
just inside.

Charge Customer Service - 833-482-3822

www.chargebikes.com