



esker

OWNER'S MANUAL

Bicycle Owner's Manual

This manual meets EN Standards 14764, 14766 and 14781, and CPSC Title 16 Section 1512.19

IMPORTANT:

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. Additional safety, performance and service information for specific components such as suspension or pedals on your bicycle, or for accessories such as helmets or lights that you purchase, may also be available. Make sure that your dealer has given you all the manufacturers' literature that was included with your bicycle or accessories. 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 your dealer or the bicycle's manufacturer. This manual is not intended as a comprehensive use, service, repair or maintenance manual. Please see your dealer for all service, repairs or maintenance. Your dealer may also be able to refer you to classes, clinics or books on bicycle use, service, repair or maintenance.

GENERAL WARNING:

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.

This Manual contains many "Warnings" and "Cautions" concerning the consequences of failure to maintain or inspect your bicycle and of failure to follow safe cycling practices.

- The word WARNING indicates a potentially hazardous situation which, if not avoided, could result in serious injury or death.
- The word CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury, or is an alert against unsafe practices.
- The word CAUTION also indicates a situation which, if not avoided, could result in serious damage to the bicycle or the voiding of your warranty.

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 which 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.

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 bike 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.

NOTE: We strongly urge you to read this Manual in its entirety before your first ride. At the very least, read and make sure that you understand each point in this section, and refer to the cited sections on any issue which you don't completely understand. Please note that not all bicycles have all of the features described in this Manual. Ask your dealer to point out the features of your bicycle.

Bike fit

1. Is your bike the right size? If your bicycle is too large or too small for you, you may lose control and fall. If your new bike is not the right size, ask your dealer to exchange it before you ride it.
2. Is the saddle at the right height? If you adjust your saddle height, follow the Minimum Insertion instructions on the seatpost.
3. Are saddle and seat post securely clamped? A correctly tightened saddle will allow no saddle movement in any direction.
4. Are the stem and handlebars at the right height for you? If not, see your dealer.
5. Can you comfortably operate the brakes? If not, you will need to adjust their angle and reach.
6. Do you fully understand how to operate your new bicycle? If not, before your first ride, have your dealer explain any functions or features which you do not understand.

Safety first

1. Always wear an approved helmet when riding your bike, and follow the helmet manufacturer's instructions for fit, use and care.
2. Do you have all the other required and recommended safety equipment? See Section 2. It's your responsibility to familiarize yourself with the laws of the areas where you ride, and to comply with all applicable laws.
3. Do you know how to correctly secure your front and rear wheels? Consult your dealer or manufacturer before riding if you do not know how to properly secure the front and rear wheel. Riding with an improperly secured wheel can cause the wheel to wobble or disengage from the bicycle, and cause serious injury or death.
4. If your bike has toeclips and straps or clipless ("step-in") pedals, make sure you know how they work. These pedals require special techniques and skills. Follow the pedal manufacturer's instructions for use, adjustment and care.
5. Do you have "toe overlap"? On smaller framed bicycles your toe or toeclip may be able to contact the front wheel when a pedal is all the way forward and the wheel is turned.
6. Does your bike have suspension? Suspension can change the way a bicycle performs. Follow the suspension manufacturer's instructions for use, adjustment and care.

Mechanical Safety Check

Routinely check the condition of your bicycle before every ride.

- Nuts, bolts screws & other fasteners: Because manufacturers use a wide variety of fastener sizes and shapes made in a variety of materials, often differing by model and component, the correct tightening force or torque cannot be generalized. To make sure that the many fasteners on your bicycle are correctly tightened, refer to the torque specifications in the instructions provided by the manufacturer of the component in question. Correctly tightening a fastener requires a calibrated torque wrench. A professional bicycle mechanic with a torque wrench should torque the fasteners on your bicycle. If you choose to work on your own bicycle, you must use a torque wrench and the correct tightening torque specifications from the bicycle or component manufacturer or from your dealer. If you need to make an adjustment at home or in the field, we urge you to exercise care, and to have the fasteners you worked on checked by your dealer as soon as possible.

WARNING: Correct tightening force on fasteners –nuts, bolts, screws– on your bicycle is important. Too little force, and the fastener may not hold securely. Too much force, and the fastener can strip threads, stretch, deform or break. Either way, incorrect tightening force can result in component failure, which can cause you to lose control and fall.

- Make sure nothing is loose. Lift the front wheel off the ground by two or three inches, then let it bounce on the ground. Anything sound, feel or look loose? Do a visual and tactile inspection of the whole bike. Any loose parts or accessories? If so, secure them. If you're not sure, ask someone with experience to check.
- Tires & Wheels: Make sure tires are correctly inflated. Check 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. Compare what you see with how it looks when you know the tires are correctly inflated; and adjust if necessary.
- Tires in good shape? Spin each wheel slowly and look for cuts in the tread and sidewall. Replace damaged tires before riding the bike.
- Wheels true? Spin each wheel and check for brake clearance and side-to-side wobble. If a wheel wobbles side to side even slightly, take the bike to a qualified bike shop to have the wheel trued.

- Brakes: Check the brakes for proper operation. Squeeze the brake levers. Are the brake quick-releases closed? All control cables seated and securely engaged? Can you apply full braking force at the levers without having them touch the handlebar? If not, your brakes need adjustment. Do not ride the bike until the brakes are properly adjusted by a professional bicycle mechanic.
- Wheel retention system: Make sure the front and rear wheels are correctly secured.
- Seat post: If your seat post has an over-center cam action fastener for easy height adjustment, check that it is properly adjusted and in the locked position.
- Handlebar and saddle alignment: Make sure the saddle and handlebar stem are parallel to the bike's center line and clamped tight enough so that you can't twist them out of alignment.
- Handlebar ends: Make sure the handlebar grips are secure and in good condition. If not, have your dealer replace them. Make sure the handlebar ends and extensions are plugged. If not, have your dealer plug them before you ride. If the handlebars have bar end extensions, make sure they are clamped tight enough so you can't twist them.

WARNING: Loose or damaged handlebar grips or extensions can cause you to lose control and fall. Unplugged handlebars or extensions can cut you and cause serious injury in an otherwise minor accident.

VERY IMPORTANT SAFETY NOTE: Please also read and become thoroughly familiar with the important information on the lifespan of your bicycle and its components.

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.

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.

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

Practice shifting the 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 out 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 your dealer before you ride again.

Safety

The Basics

WARNING: The area in which you ride may require specific safety devices. It is your responsibility to familiarize yourself with the laws of the area 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.

1. 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.

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

2. Always do the Mechanical Safety Check before you get on a bike.

3. Be thoroughly familiar with the controls of your bicycle: brakes, pedals, shifting, and all other controls.

4. Be careful to keep body parts and other objects away from the sharp teeth of chainrings, the moving chain, the turning pedals and cranks, and the spinning wheels of your bicycle.

5. Always wear:

- Shoes that will stay on your feet and will grip the pedals. Make sure that shoelaces cannot get into moving parts, and 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 eyewear, to protect against airborne dirt, dust and bugs — tinted when the sun is bright, clear when it's not.

6. Don't jump with your bike. Jumping a bike, particularly a BMX or mountain bike, can be fun; but it can put huge and unpredictable stress on the bicycle and its components. Riders who insist on jumping their bikes risk serious damage to their bicycles as well as to themselves.

7. Ride at a speed appropriate for conditions. Higher speed means higher risk.

Riding Safety

1. Obey all Rules of the Road and all local traffic laws.
2. You are sharing the road or the path with others — motorists, pedestrians and other cyclists. Respect their rights.
3. Ride defensively. Always assume that others do not see you.
4. Look ahead, and be ready to avoid:
 - 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.
 - Potholes, 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 cause you to have an accident.
 - The many other hazards and distractions which can occur on a bicycle ride.
5. 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.
6. 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.
7. Use approved hand signals for turning and stopping.
8. Never ride with headphones. They 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.
9. Never carry a passenger, unless it is a small child wearing an approved helmet and secured in a correctly mounted child carrier or a child-carrying trailer.
10. 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.
11. Never hitch a ride by holding on to another vehicle.
12. 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.
13. Don't weave through traffic or make any moves that may surprise people with whom you are sharing the road.
14. Observe and yield the right of way.
15. Never ride your bicycle while under the influence of alcohol or drugs.
16. 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.

Off Road Safety

We recommend that children not ride on rough terrain unless they are accompanied by an adult.

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 some one 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 some cash for food, 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.

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.

Wet Weather Riding

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.

Under wet conditions, the stopping power of your brakes (as well as the brakes of other vehicles sharing the road or trail) is dramatically reduced and your tires don't grip nearly as well. This makes it harder to control speed and easier to lose control. 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.

Night Riding

Riding a bicycle at night is much more dangerous than riding during the day. A bicyclist is very difficult for motorists and pedestrians to see. Therefore, 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. Consult your dealer about night riding safety equipment.

WARNING: Reflectors are not a substitute for required lights. Riding at dawn, at dusk, at night or at other times of poor visibility without an adequate bicycle lighting system and without reflectors is dangerous and may result in serious injury or death. Bicycle reflectors are designed to pick up and reflect car lights and streetlights in a way that may help you to be seen and recognized as a moving bicyclist.

CAUTION: 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. The mounting brackets of front and rear reflectors are often designed as brake straddle cable safety catches which prevent the straddle cable from catching on the tire tread if the cable jumps out of its yoke or breaks.

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

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 taillights 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. While riding at dawn, at dusk or at night:
 - Ride slowly.
 - Avoid dark areas and areas of heavy or fast-moving traffic.
 - Avoid road hazards.
- If possible, ride on familiar routes. If riding in traffic:
 - Be predictable. Ride so that drivers can see you and predict your movements.
 - Be alert. Ride defensively and expect the unexpected.
 - If you plan to ride in traffic often, ask your dealer about traffic safety classes or a good book on bicycle traffic safety.

Extreme, stunt or competition riding

Whatever you call it, if you are aggressive riding, you will get hurt, and you voluntarily assume a greatly increased risk of injury or death. Not all bicycles are designed for these types of riding, and those that are may not be suitable for all types of aggressive riding. Check with your dealer or the bicycle's manufacturer about the suitability of your bicycle before engaging in extreme riding.

When riding fast downhill, you can reach speeds achieved by motorcycles, and therefore face similar hazards and risks. Have your bicycle and equipment carefully inspected by a qualified mechanic and be sure it is in perfect condition. Consult with expert riders, area site personnel and race officials on conditions and equipment advisable at the site where you plan to ride. Wear appropriate safety gear, including an approved full face helmet, full finger gloves, and body armor. Ultimately, it is your responsibility to have proper equipment and to be familiar with course conditions.

WARNING: Although many catalogs, advertisements and articles about bicycling depict riders engaged in extreme riding, this activity is extremely dangerous, increases your risk of injury or death, and increases the severity of any injury. Remember that the action depicted is being performed by professionals with many years of training and experience. Know your limits and always wear a helmet and other appropriate safety gear. Even with state-of-the-art protective safety gear, you could be seriously injured or killed when jumping, stunt riding, riding downhill at speed or in competition.

WARNING: Bicycles and bicycle parts have limitations with regard to strength and integrity, and this type of riding can exceed those limitations.

We recommend against this type of riding because of the increased risks; but if you choose to take the risk, at least:

- Take lessons from a competent instructor first
- Start with easy learning exercises and slowly develop your skills before trying more difficult or dangerous riding
- Use only designated areas for stunts, jumping, racing or fast downhill riding
- Wear a full face helmet, safety pads and other safety gear
- Understand and recognize that the stresses imposed on your bike by this kind of activity may break or damage parts of the bicycle and void the warranty
- Take your bicycle to your dealer if anything breaks or bends. Do not ride your bicycle when any part is damaged.

If you ride downhill at speed, do stunt riding or ride in competition, know the limits of your skill and experience. Ultimately, avoiding injury is your responsibility.

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 a different size tire, make sure that it is compatible with your bicycle by checking with your dealer. Be sure to read, understand and follow the instructions that accompany the products you purchase for your bicycle.

WARNING: Failure to confirm compatibility, properly install, operate and maintain any component or accessory can result in serious injury or death.
WARNING: Changing the components on your bike with other than genuine replacement parts may compromise the safety of your bicycle and may void the warranty. Check with your dealer before changing the components on your bike.

Fit

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. If your new bike doesn't fit, ask your dealer to exchange it before you ride it.

Saddle position

Correct saddle adjustment is an important factor in getting the most performance and comfort from your bicycle. If the saddle position is not comfortable for you, see your dealer.

The saddle can be adjusted in three directions:

1. Up and down adjustment.

- sit on the saddle;
- place one heel on a pedal;
- rotate the crank until the pedal with your heel on it is in the down position and the crank arm is parallel to the seat tube. If your leg is not completely straight, your saddle height needs to be adjusted. 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.

Ask your dealer to set the saddle for your optimal riding position and to show you how to make this adjustment. If you choose to make your own saddle height adjustment:

- loosen the seat post clamp
- raise or lower the seat post in the seat tube
- make sure the saddle is straight fore and aft
- re-tighten the seat post clamp to the recommended torque.

Once the saddle is at the correct height, make sure that the seat post does not project from the frame beyond its "Minimum Insertion" or "Maximum Extension" point.

WARNING: If your seat post is not inserted in the seat tube as described, the seat post may break, which could cause you to lose control and fall.

2. Front and back adjustment. The saddle can be adjusted forward or back to help you get the optimal position on the bike. Ask your dealer to set the saddle for your optimal riding position and to show you how to make this adjustment. If you choose to make your own front and back adjustment, 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).
3. Saddle angle adjustment. Most people prefer a horizontal saddle; but some riders like the saddle nose angled up or down just a little. Your dealer can adjust saddle angle or teach you how to do it yourself.
4. 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. Your dealer can help you select a saddle which, when correctly adjusted for your body and riding style, will be comfortable.

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 your dealer about saddle adjustment or a different saddle.

WARNING: An insufficiently tightened stem clamp bolt, handlebar clamp 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 turns the handlebars in relation to the stem or turn the bar end extensions in relation to the handlebar, the bolts are insufficiently tightened.

Control position adjustments

The angle of the brake and shift control levers and their position on the handlebars can be changed. Ask your dealer to make the adjustments for you. If you choose to make your own control lever angle adjustment, be sure to retighten the clamp fasteners to the recommended torque.

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 in sufficient to apply full braking power can result in loss of control, which may result in serious injury or death.

Tech

It's important to your safety, performance and enjoyment to understand how things work on your bicycle. We urge you to ask your dealer how to do the things described in this section before you attempt them yourself, and that you have your dealer 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 dealer.

Wheels

Ask your dealer to instruct you in correct wheel removal and installation, and ask him to give you any available manufacturer's instructions.

WARNING: Riding with an improperly secured wheel can allow the wheel to wobble or fall off the bicycle, which can cause serious injury or death. Therefore, it is essential that you:

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

CAUTION: If your bike is equipped with a front disk brake, be careful not to damage the disk, caliper or brake pads when re-inserting the disk into the caliper. Never activate a disk brake's control lever unless the disk is correctly inserted in the caliper.

- With the steering fork facing forward, insert the wheel between the fork blades so that the axle seats firmly at the top of the fork dropouts. The cam lever, if there is one, should be on rider's left side of the bicycle.
- With a through-bolt or bolt-on system, tighten the fasteners to the torque specifications or the hub manufacturer's instructions.
- Spin the wheel to make sure that it is centered in the frame and clears the fork; then squeeze the brake lever and make sure that the brakes are operating correctly.

Removing a disk brake or rim brake Rear Wheel

- If you have a multi-speed bike with a derailleur gear system: shift the rear derailleur to high gear (the smallest, outermost rear sprocket).
- If you have an internal gear rear hub, consult your dealer or the hub manufacturer's instructions before attempting to remove the rear wheel.
- If you have a single-speed bike, go to steps below.
- On a derailleur gear system, pull the derailleur body back with your right hand.
- With a cam action mechanism, move the quick-release lever to the OPEN position (fig. 8b). With a through bolt or bolt on mechanism, loosen the fastener(s) with an appropriate wrench, lock lever or integral lever; then push the wheel forward far enough to be able to remove the chain from the rear sprocket.
- Lift the rear wheel off the ground a few inches and remove it from the rear dropouts.

Installing a Rear Wheel

CAUTION: If your bike is equipped with a rear disk brake, be careful not to damage the disk, caliper or brake pads when re-inserting the disk into the caliper. Never activate a disk brake's control lever unless the disk is correctly inserted in the caliper.

1. With a cam action system, move the cam lever to the OPEN position. The lever should be on the side of the wheel opposite the derailleur and free-wheel sprockets.
2. On a derailleur bike, make sure that the rear derailleur is still in its outermost, high gear, position; then pull the derailleur body back with your right hand. Put the chain on top of the smallest freewheel sprocket.
3. On single-speed, remove the chain from the front sprocket, so that you have plenty of slack in the chain. Put the chain on the rear wheel sprocket.
4. Then, insert the wheel into the frame dropouts and pull it all the way into the dropouts.
5. On a single speed or an internal gear hub, replace the chain on the chainring; pull the wheel back in the dropouts so that it is straight in the frame and the chain has about 1/4 inches of up-and-down play.
6. With a cam action system, move the cam lever upwards and swing it into the CLOSED position. The lever should now be parallel to the seat stay or chain stay and curved toward the wheel. To apply enough clamping force, you should have to wrap your fingers around the fork blade for leverage, and the lever should leave a clear imprint in the palm of your hand.
7. With a through-bolt or bolt-on system, tighten the fasteners to the torque specifications or the hub manufacturer's instructions.

NOTE: If, on a traditional cam action system, the lever cannot be pushed all the way to a position parallel to the seat stay or chain stay, return the lever to the OPEN position. Then turn the tension adjusting nut counterclockwise one-quarter turn and try tightening the lever again.

WARNING: Securely clamping the wheel with a cam action retention device takes considerable force. If you can fully close the cam lever without wrapping your fingers around the seat stay or chain stay for leverage, the lever does not leave a clear imprint in the palm of your hand, and the serrations on the wheel fastener do not emboss the surfaces of the dropouts, the tension is insufficient. Open the lever; turn the tension adjusting nut clockwise a quarter turn; then try again.

8. Spin the wheel to make sure that it is centered in the frame; then squeeze the brake lever and make sure that the brakes are operating correctly.

Brakes

WARNING:

1. Riding with improperly adjusted brakes, worn brake pads 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. Some bicycle 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 operation and care of your brakes, and for when brake pads must be replaced. If you do not have the manufacturer's instructions, see your 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. Our bikes are built to US Standard where the right brake lever controls the rear brake and the left brake lever controls the front brake; but, to make sure your bike's brakes are set up this way, 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 your dealer before riding the bike. The lever reach may be adjustable; or you may need a different brake lever design.

Bicycle Suspension

Many of our bicycles are equipped with suspension systems. There are different types of suspension systems. If your bicycle has a suspension system, be sure to read and follow the suspension manufacturer's setup and service instructions for your bike. If you do not have the manufacturer's instructions, see your 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.

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.

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. The size, pressure rating, and on some high-performance tires the specific recommended use, are marked on the sidewall of the tire. The part of this information which is most important to you is Tire Pressure.

WARNING: Never inflate a tire beyond the maximum pressure marked on the tire's sidewall. Exceeding the recommended maximum pressure may blow the tire off the rim, which could cause damage to the bike and injury to the rider and bystanders. 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 tubeless tire or tube by allowing the tire to deform sufficiently to pinch the inner tube or sidewall 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 your 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 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 Valves

There are primarily two kinds of bicycle tube valves: The Schraeder Valve and the Presta Valve. The bicycle pump you use must have the fitting appropriate to the valve stems on your bicycle. Esker mountain bikes are equipped with presta valves.

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

The Presta valve 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 Schraeder pump fitting, you'll need a Presta adapter (available at your bike shop) which screws on to the valve stem once you've freed up the valve. The adapter fits into the Schraeder 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.

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 tube failure, which could cause you to lose control and fall. Replace a patched tube as soon as possible.

Service

WARNING: Technological advances have made bicycles and bicycle components more complex, and the pace of innovation is increasing. It is impossible for this manual to provide all the information required to properly repair and/or maintain your bicycle. In order to help minimize the chances of an accident and possible injury, it is critical that you have any repair or maintenance which is not specifically described in this manual performed by your dealer. Equally important is that your individual maintenance requirements will be determined by everything from your riding style to geographic location. Consult your dealer for help in determining your maintenance requirements.

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 your dealer 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.

If you want to learn to do major service and repair work on your bike:

1. Ask your dealer for copies of the manufacturer's installation and service instructions for the components on your bike, or contact the component manufacturer.
2. Ask your dealer to recommend a book or online resource on bicycle repair.
3. Ask your dealer about the availability of bicycle repair courses in your area.

We recommend that you ask your dealer to check the quality of your work the first time you work on something and before you ride the bike, just to make sure that you did everything correctly. Since that will require the time of a mechanic, there may be a modest charge for this service. We also recommend that you ask your dealer for guidance on what spare parts, such as inner tubes, light bulbs, etc. it would be appropriate for you to have once you have learned how to replace such parts when they require replacement.

Service Intervals

Some service and maintenance can and should be performed by the owner, and require no special tools or knowledge beyond what is presented in this manual. The following are examples of the type of service you 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.

1. **Break-in Period:** Your bike will last longer and work better if you break it in before riding it hard. Control cables and wheel spokes may “seat” when a new bike is first used and may require readjustment by your dealer. Your Mechanical Safety Check will help you identify some things that need readjustment. But even if everything seems fine to you, it’s best to take your bike back to the dealer for a checkup. Dealers typically suggest you bring the bike in for a 30 day checkup. 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 your dealer before riding it again.

2. **Before every ride:** Do a Mechanical Safety Check.

3. **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 your dealer about the best lubricants and the recommended lubrication frequency for your area.

4. **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 your dealer 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 your dealer check it.
- Grab one pedal and rock it toward and away from the centerline of the bike; then do the same with the other ped al. Anything feel loose? If so, have your dealer check it.
- Take a look at the brake pads. Starting to look worn? Time to have the dealer adjust or replace them.
- Carefully check the control cables and cable housings. Any rust? Kinks? Fraying? If so, have your dealer 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 your dealer check the wheel for tension and trueness.
- Check the tires for excess wear, cuts or bruises. Have your dealer 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 an y 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.

WARNING: Like any mechanical device, a bicycle and its 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. Product life is often related to the kind of riding you do and to the treatment to which you submit the bicycle.

5. As required: If either brake lever fails the Mechanical Safety Check, don't ride the bike. Have your dealer check the brakes. If the chain won't shift smoothly and quietly from gear to gear, the derailleur is out of adjustment. See your dealer.

If your bicycle sustains an impact:

First, check yourself for injuries, and take care of them as best you can. Seek medical help if necessary. Next, check your bike for damage. After any crash, take your bike to your dealer for a thorough check. Carbon composite components, including frames, wheels, handlebars, stems, cranksets, brakes, etc. which have sustained an impact must not be ridden until they have been disassembled and thoroughly inspected by a qualified mechanic.

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

Intended use of your bicycle

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. No one type of bicycle is suited for all purposes. Your retailer can help you pick the "right tool for the job" and help you understand its limitations. There are many types of bicycles and many variations within each type. There are also bicycles that mix features. Within each of type of bicycle, one can optimize for certain purposes. Visit your bicycle shop and find someone with expertise in the area that interests you. Do your own homework. Seemingly small changes such as the choice of tires can improve or diminish the performance of a bicycle for a certain purpose.

The lifespan of your bike and its components

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, light weight 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 tradeoff, 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 your dealer 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 your dealer for professional care and attention.

WARNING: Frequent inspection of your bike is important to your safety. Follow the Mechanical Safety Check in this Manual before every ride.

Periodic, more detailed 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 your dealer cannot track your use, you must take responsibility for periodically bringing your bike to your dealer for inspection and service. Your dealer 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 your dealer, we urge you to read this section 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.

Understanding metals

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

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 the 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 crashworthiness 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. When a metal bike crashes, you will usually see some evidence of this ductility in bent, buckled or folded metal.

It is now possible for the main frame to be made of metal and the fork of carbon fiber. See Understanding composites below. 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.

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. 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 tradeoff: the wonderful, lightweight performance we want requires that we inspect the structure.

What to look for:

- ONCE A CRACK 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,” are as 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 promptly.

In most cases a fatigue crack is not a defect. It is a sign that the part has been worn out, a sign the part has reached the end of its useful life. When your car tires wear down to the point that the tread bars are contacting the road, those tires are not defective. Those tires are worn out and the tread bar says “time for replacement.” When a metal part shows a fatigue crack, it is worn out. The crack says “time for replacement.”

Fatigue Is Not A Perfectly Predictable Science

Fatigue is not a perfectly predictable science, but here are some general factors to help you and your dealer determine how often your bicycle should be inspected. 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 that shorten product life:

- Hard, harsh riding style
- “Hits”, crashes, jumps, other “shots” to the bike
- High mileage
- Higher body weight
- Stronger, more fit, more aggressive rider
- Corrosive environment (wet, salt air, winter road salt, accumulated sweat)
- Presence of mud, dirt, sand, soil in riding environment

Factors that lengthen product life:

- Smooth, fluid riding style
- No “hits”, crashes, jumps, other “shots” to the 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

All riders must understand a fundamental reality of composites. Composite materials constructed of carbon fibers are strong and light, but when crashed or overloaded, carbon fibers do not bend, they break.

What Are 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.”

Carbon fiber 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.

If You Hit Something Or Have A Crash, What Can You Expect From Your Carbon Fiber Bike?

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 your carbon frame? It depends on many complex factors. But we can tell you that if the impact is hard enough, the fork or frame may be completely broken. Note the significant difference in behavior between carbon and metal. Even if the carbon frame was twice as strong as a metal frame, once the carbon frame is overloaded it will not bend, it will break completely.

Inspection of Composite Frame, Fork, and Components 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 before riding.

WARNING: Do not ride a bicycle or component with any delamination or crack. Riding a delaminated or cracked frame, fork or other component could lead to complete failure, with risk of serious injury or death.

Understanding components

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.

Aftermarket “Super Light” components

Think carefully about your rider profile as outlined above. 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 your dealer. Take these choices seriously and understand that you are responsible for the changes. A useful slogan to discuss with your dealer if you contemplate changing components is “Strong, Light, Cheap—pick two.”

Original Equipment components

Bicycle and component manufacturers test 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.

CARBON FRAME GUIDE

Please read the following instructions. If you have any doubt regarding your mechanical ability, visit your local authorized Esker dealer. Esker recommends that the seat post be installed according to recommended torque specification by a qualified mechanic.

Warning: Failure to follow any warning may result in a catastrophic failure of the seat post, resulting in serious injury or death. This phrase may not be repeated in connection with each warning. Assembling a complete bicycle is a complicated task. Only a trained and experienced bicycle mechanic should install components to this frame.

Warning: Bicycle assembly requires training and experience. If you do not have the experience and training as a bicycle mechanic, DO NOT attempt the assembly of this bike. Failure to follow this warning may result in serious injury or death. Follow all torque specifications to ensure the best assembly possible and to prevent any damage to the components or frame. For correct torque specifications as well as recommended loads that the contact points of the frame are capable of accepting, please refer to the specific component documentation.

Warning: Failure to follow torque specifications will void your warranty. It may also damage the frame, which may not be visible to the eye. If there is damage to the frame, this can result in loss of structural integrity, which may result in serious injury or death.

All bicycle components should be compatible with each other (i.e. handlebar, handlebar stem, seat post, saddle, brakes, etc.). Any doubt regarding compatibility should be addressed with an authorized Esker dealer.

Warning: You should never clamp the frame when placing this bike in a repair stand. Always clamp the seat post. Clamping the frame can cause serious damage to the frame which may not be visible. This will impair the structural integrity of the frame. Failure to follow this warning may result in serious injury or death.

Your Esker frame does not require any pre-installation preparation to the bottom bracket or head tube. Surfaces are prepared at the factory. Grease will still need to be placed on the bottom bracket threads and the head set cups. If necessary, you may need to chase the bottom bracket threads.

BOTTOM BRACKET:

Clean and grease bottom bracket shell threads before installing. Recommended torque is 442 in-lbf (50 N-m). Do not exceed maximum torque of 670 in-lbf (70 N-m).

HEADSET INSTALLATION:

All Esker bikes come with integrated headsets. No headset tool is required. Clean and grease headset cups before installing bearings. Do not mix headset components with other headsets. For example, crown races vary from headset to headset.

REAR DERAILLEUR:

Clean and lightly grease threads prior to installation. Recommended torque for the rear derailleur is 70 in-lbf (8N-m). Do not exceed maximum torque of 87 in-lbf (10 N-m).

BRAKES:

Recommended torque for brake calipers is 70 in-lbf (8 N-m). Do not exceed maximum torque of 87 in-lbf (10 N-m).

WATER BOTTLE CAGE:

Recommended torque for the water bottle cage bolt is 35 in-lbf (3.9 N-m). Do not exceed maximum torque of 40 in-lbf (4.5 N-m).

Warning: You should always take extreme precaution to not damage carbon fiber or composite materials, including frame or other carbon/composite component. Damage may result in loss of structural integrity. This damage may not be visible. Before each ride and after every crash, you should carefully inspect your bicycle for any dents, gouges, fraying, scratches through the paint, chipping, bending, or any other signs of damage. It is recommended by Esker Bikes that you take your bike to an Esker dealer for a complete inspection if it shows any of these signs.

WARRANTY:

For complete warranty provisions, please see the Esker Limited Warranty or visit your local authorized Esker dealer.

Record of Purchase

Your warranty is opposite this page, on the inside back cover of this manual. Please read the warranty carefully. In case of warranty claims it is important that you keep your original sales receipt or other proof of purchase, with a record of the serial number of your bicycle and the place and date you purchased it. Bike shops do not always have records of serial numbers. Please use the space below to record this information. We also suggest that you register your bicycle with your local police department.

Serial Number

Esker Model Name

Size

Date of Purchase

Dealer Name

Dealer Address

ESKER LIMITED LIFETIME WARRANTY

POLICY: Esker Cycles provides the original retail purchaser of each new Esker bicycle a limited lifetime warranty against defects in materials and workmanship for the bicycle frame and rigid fork when purchased from and assembled by an Authorized Esker Dealer, and a one year warranty for original components excluding paint, decals, tires, tubes, chains and other wear & tear items. Suspension forks and rear shocks shall be covered by the stated warranty of their original manufacturers.

REMEDY: This warranty is expressly limited to the repair or replacement of a defective frame, fork, or part and is the sole remedy of the warranty. This warranty applies only to the original owner and is not transferable. Claims under this warranty must be made through an Authorized Esker Dealer. Proof of purchase is required and warranty registration must be completed at <https://eskercycles.com/pages/registration> before a warranty claim can be processed. Warranty remedies are subject to depreciation based on age and use of the bicycle.

EXCLUSIONS: Improper assembly or follow-up maintenance voids the warranty. This warranty also does not cover damage from normal wear and tear, installation of parts or accessories not originally intended or compatible with the bicycle as sold, damage or failure due to accident, misuse or neglect, modification of the frame, fork or components, or any other use that can substantially shorten the useful life of the bicycle. Labor charges for component removal or replacement are not covered by the warranty. Additionally, this warranty does not cover damage associated with commercial use, racing or competition, stunts or lack of technical skill of the user.

LIABILITY LIMITATION: Esker Cycles shall not be responsible for incidental or consequential damages including damages for personal injury, property damage or economic losses. Some states do not allow the exclusion of incidental or consequential damages, so the above exclusion may not apply to you. This warranty gives the consumer specific legal rights, and those rights may vary from place to place. This warranty does not affect the statutory rights of the consumer.

“NO FAULT” WARRANTY: If your Esker frame or fork is damaged in a way not covered by the foregoing warranty, Esker Cycles will work with your local Esker dealer to replace it at a reduced cost. Please check with your local dealer regarding the latest pricing, policy guidelines and availability. Any frame or fork sold through this program requires that the damaged product be returned to Esker before the replacement item is shipped. Please be aware that any shipping and/or labor costs are not covered as part of this program. All No Fault Warranty purchases must be handled through an Authorized Esker Dealer.