



We should have **COLORFUL** life!

— **FITTOO**[®] bicycles **fit**[®] you!

FITTOO BRAND BICYCLE OWNER'S MANUAL

WARNING:

This manual contains important safety informations, please read all pages carefully before you take the first ride on your new bike, and always keep it for reference.

For each certain model bike assembling, please log in our website to find the relative assembling video, or ask for the vedio from online service.

FITTOO bicycle

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PART I

1. A-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 combination of the safety alert symbol  and the word **WARNING** indicates a potentially hazardous situation which, if not avoided, could result in serious injury or death.

The combination of the safety alert symbol  and 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** used without the safety alert symbol 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.

1. B- 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.

1. C –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.

Always refer to the torque specifications in the instructions provided by the manufacturer of a 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. 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 a qualified bike mechanic as soon as possible. Note that there are some components which require special tools and knowledge.



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, or rubs against or hits the brake pads, take the bike to a qualified bike shop to have the wheel trued.



CAUTION

Wheels must be true up for the brakes to work effectively. Wheel truing up is a skill which requires special tools and experience. Do not attempt to true up a wheel unless you have the knowledge, experience and tools needed to do the job correctly.

Wheel rims clean and undamaged? Make sure the rims are clean and undamaged at the tire bead and, if you have rim brakes, along the braking surface. Check to make sure that any rim wear indicator marking is not visible at any point on the wheel rim.



WARNING

BICYCLE WHEEL RIMS ARE SUBJECT TO WEAR.

Some wheel rims have a rim wear indicator which becomes visible as the rim's braking surface wears. A visible rim wear indicator on the side of the wheel rim is an indication that the wheel rim has reached its maximum usable life. Riding a wheel that is at the end of its usable life can result in wheel failure, which can cause you to lose control and fall.

Brakes

Check the brakes for proper operation. Squeeze the brake levers. Are the brake quick-releases closed? All control cables seated and securely engaged? Do the brake pads contact the wheel rim squarely and make full contact with the rim? Do the brake pads touch the wheel rim within an inch of brake lever movement? 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-centercam 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, replace them. Make sure the handlebar ends and extensions are plugged. If not, 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 understand and become thoroughly familiar with the important information on the lifespan of your bicycle and its components.
INSPECT FOR SAFETY.

PART I

1. D – 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, which is very important for safe purpose.

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, check with a qualified bike mechanic before you ride.

section 2. safety



WARNING

MANY COUNTRIES REQUIRE SPECIFIC SAFETY DEVICES. IT IS YOUR RESPONSIBILITY TO FAMILIARIZE YOURSELF WITH THE LAWS OF THE DIFFERENT COUNTRIES 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.

2. A –The Basics

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.



Figure 1. Bicycle Helmet

Your helmet should be:

- Follow the local relative products standard
- 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.

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 etc.
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. 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. Unless your bicycle was specifically designed for jumping, don't jump with your bike. Jumping a bike, particularly a BMX or downhill-riding suitable 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 will risk serious damage, to their bicycles as well as to themselves.
7. Ride at a speed appropriate for conditions. Increased speed means higher risk.

2. B –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.
 - 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.

- 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.
- 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.
- Use approved hand signals for turning and stopping.
- 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.
- Never carry a passenger, and before installing a child carrier or trailer, check 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.
- 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.
- Never hitch a ride by holding on to another vehicle.
- Don't do stunts, wheelies or jumps. If you intend to do stunts, wheelies, jumps or go racing with your bike despite our advice not to, make sure your bike is suitable for the action, and think carefully about your skills before deciding to take the large risks that go with this kind of riding.
- Don't weave through traffic or make any moves that may surprise people with whom you are sharing the road.
- Observe and yield the right of way.
- Never ride your bicycle while under the influence of alcohol or drugs.
- 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.

2. C – Off-Road Safety

MOST IMPORTANT: must make sure that your bike is suitable for off-road riding. You may find the warning label on each bike to tell you whether your bike is workable for off-road extreme riding. We recommend that children not ride on rough terrain unless they are accompanied by an adult.

- 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.
- Wear safety gear appropriate to the kind of riding you plan to do.
- 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.
- Always take along some kind of identification, so that people know who you are in case of an accident; and take along with some cash for a candy bar, a cool drink or an emergency phone call.
- 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.
- 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.

2. D – Wet Weather Riding

Under wet conditions, the stopping power of your brakes (as well as the brakes of other vehicles sharing the road) is dramatically reduced and 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.

2. E – 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. Get night riding safety equipments be fully prepared.



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 street lights and car lights 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. Must 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 & REAR REFLECTORS, AND WHEEL REFLECTORS OR REFLECTOR BRACKETS FROM YOUR BICYCLE.

They are an integral part of the bicycle's safety system.

REMOVING THE REFLECTORS MAY REDUCE YOUR VISIBILITY TO OTHERS USING THE ROADWAY. BEING STRUCK BY OTHER VEHICLES MAY RESULT IN SERIOUS INJURY OR DEATH.

The reflector brackets may protect you from the brake straddle cable catching on the tire in the event of brake cable failure. If a brake straddle cable catches on the tire, it can cause the wheel to stop suddenly, causing you to lose control and fall.

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

WHILE RIDING AT DAWN, AT DUSK OR AT NIGHT:

- Ride slowly.
- Avoid dark areas, 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.

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.

2. F – Extreme, Stunt Or Competition Riding

Whether you call it Aggro, Hucking, Freeride, North Shore, Downhill, Jumping, Stunt Riding, Racing or something else: if you engage in this sort of extreme, 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 carefully your bike manual, or warning labels on bikes 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 and race officials on conditions and equipment

 **WARNING**

Bicycles and bicycle parts have limitations with regard to strength and integrity, and this type of riding can exceed those limitations or dramatically reduce the length of their safe use.

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 a bike shop or a qualified bike mechanic, 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 full responsibility.

2. G-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 a qualified bike mechanic.

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

IMPORTANT: 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

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

section 3. 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 a qualified bike mechanic to make the adjustments on your bicycle; or, if you have the experience, skill and tools, make sure to check it carefully before each riding.

WARNING

IF YOUR BICYCLE DOES NOT FIT PROPERLY, YOU MAY LOSE CONTROL AND FALL.

3. A –Stand Over Height

1. Diamond frame bicycles

Stand over height is the basic element of bike fit (see fig. 2). 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. To check for correct stand over 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 stand over 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 stand over height clearance. And a bike that you'll use off road should give you four inches (10 cm) or more of clearance.



Figure 2. Stand Over Height



2. Step-through frame bicycles

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 3. B. SADDLE POSITION 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.

3. B –Saddle Position

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

The saddle can be adjusted in three directions:

1. Up and Down Adjustment

To check for correct saddle height (fig. 3):

- 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.



Figure 3. Saddle Position

Must set the saddle for your optimal riding position.

You can make your own saddle height adjustment by following steps:

- loosen the seat post clamp
- raise or lower the seat post in the seat tube
- make sure the saddle is straight fore and after
- 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” mark (fig. 4).

NOTE: Some bicycles have a sight hole in the seat tube, the purpose of which is to make it easy to see whether the seat post is inserted in the seat tube far enough to be safe. If your bicycle has such a sight hole, use it instead of the “Minimum Insertion” or “Maximum Extension” mark to make sure the seat post is inserted in the seat tube far enough to be visible through the sight hole.

If your bike has an interrupted seat tube, as is the case on some suspension bikes, you must also make sure that the seat post is far enough into the frame so that you can touch it through the bottom of the interrupted seat tube with the tip of your finger without inserting your finger beyond its first knuckle. Also see NOTE above and fig. 5).

! WARNING

If your seat post is not inserted in the seat tube as described in B. 1 above, the seat post may break, which could cause you to lose control and fall.

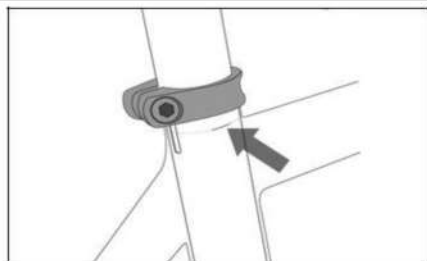


Figure 4. Minimum Insertion Mark



Figure 5. Interrupted Seat Tube

2. Front and Back Adjustment

The saddle can be adjusted forward or back to help you get the optimal position on the bike. You may set the saddle for your optimal riding position. However, if you 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. You can adjust saddle angle by a qualified mechanic or by yourself.

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.

NOTE : If your bicycle is equipped with a suspension seat post, periodically ask a qualified bike mechanic to check it. 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. 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

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. 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 make the saddle a perfect adjustment or change a different saddle.

3. C – Handlebar Height And Angle

Your bike is equipped either with a “threadless” stem, which clamps on to the outside of the steerer tube, or with a “quill” stem, which clamps inside the steerer tube by way of an expanding binder bolt. If you aren’t absolutely sure which type of stem your bike has, ask some bike mechanics.

If your bike has a “threadless” stem (fig 6), a qualified bike mechanics 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.

Find a qualified bike mechanic. Do not attempt to do this yourself, as it requires special knowledge.

If your bike has a “quill” stem (fig 7), you can adjust the handlebar height a bit by adjusting stem height by yourself.

A quill stem has an etched or stamped mark on its shaft which designates the stem’s “Minimum Insertion” or “Maximum Extension”. This mark must not be visible above the headset.

FIGURE 6

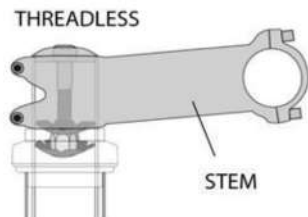
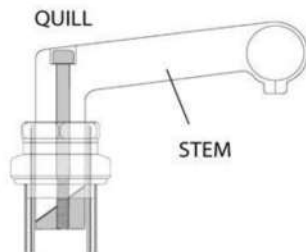


FIGURE 7



WARNING

A QUILL STEM’S “MINIMUM INSERTION MARK” MUST NOT BE VISIBLE ABOVE THE TOP OF THE HEADSET.

If the stem is extended beyond the minimum insertion mark the stem may break or damage the fork’s steerer tube, which could cause you to lose control and fall.



WARNING

On some bicycles, changing the stem or stem height can affect the tension of the front brake cable, locking the front brake or creating excess cable slack which can make the front brake inoperable. If the front brake pads move in towards the wheel rim or out away from the wheel rim when the stem or stem height is changed, the brakes must be correctly adjusted before you ride the bicycle.

Some bicycles are equipped with an adjustable angle stem. If your bicycle has an adjustable angle stem, ask a skilled bike mechanic 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.

3. D – Control Position Adjustments

The angle of the brake and shift control levers and their position on the handlebars can be changed. Find a skilled bike mechanic 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 recommended torque.

3. E – 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, you can either adjust the reach or fit shorter reach brake levers by yourself or by a qualified bike mechanic. However, we strongly recommend you to find a qualified bike mechanic to do it for you.



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.

section 4. Tec

It's important to your safety, performance and enjoyment to understand how things work on your bicycle.

4. A – Wheels

Bicycle wheels are designed to be removable for easier transportation and for repair of a tire puncture. In most cases, the wheel axles are inserted into slots, called "dropouts" in the fork and frame, but some suspension mountain bikes use what is called a "through axle" wheel mounting system.

If you have a mountain bike equipped with through axle front or rear wheels, make sure you follow the assembling manual, if not available, must find a qualified bike mechanic for following those when installing or removing a through axle wheel.

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

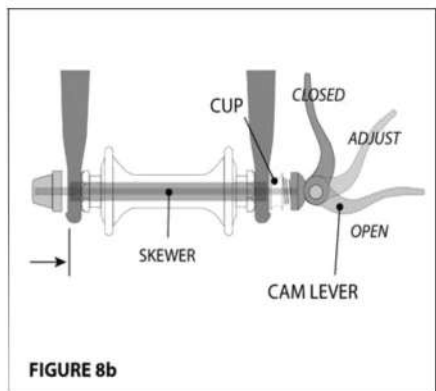
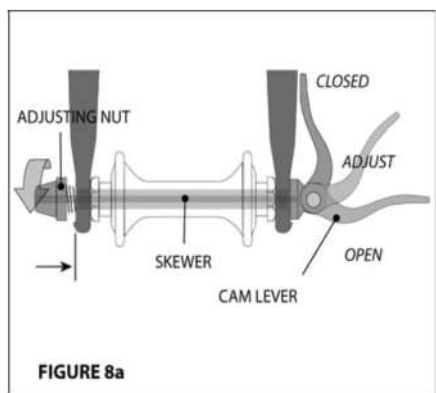
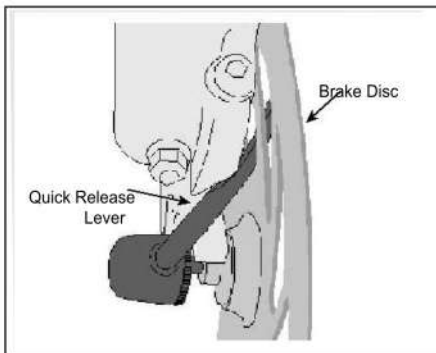
- A hollow axle with a shaft (“skewer”) running through it which has an adjustable tension nut on one end and an over-center cam on the other (cam action system, fig. 8a & 8b).
- A hollow axle with a shaft (“skewer”) running through it which has a nut on one end and a fitting for a hex key, lock lever or other tightening device on the other (through bolt, fig. 9)
- Hex nuts or hex key bolts which are threaded on to or into the hub axle (bolt-on wheel fig. 10)

! WARNING

RIDING WITH AN IMPROPERLY SECURED WHEEL CAN ALLOW THE WHEEL TO WOBBLE OR FALL OFF THE BICYCLE, OR SUDDEN STOP OF THE BIKE, WHICH CAN CAUSE SERIOUS INJURY OR DEATH. THEREFORE, IT IS ESSENTIAL THAT YOU:

1. Find a qualified bike mechanic 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. The clamping action of a correctly secured wheel must emboss the surfaces of the dropouts.

Some bicycles are equipped with a quick release lever and a disc brake. If the bicycle is ridden with the lever incorrectly adjusted or open, and the lever contacts the disc or wheel (next figure), the front wheel could stop suddenly, causing the rider to fall. Always make sure your wheels are correctly attached, and the attachment mechanisms closed and locked, before riding the bicycle.



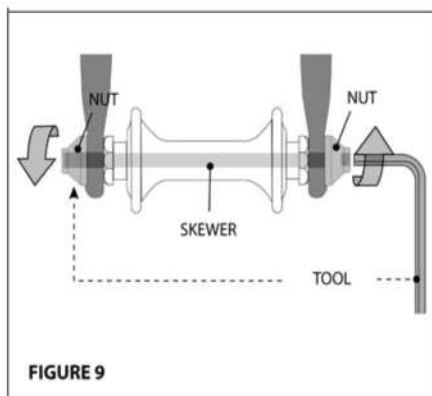


FIGURE 9

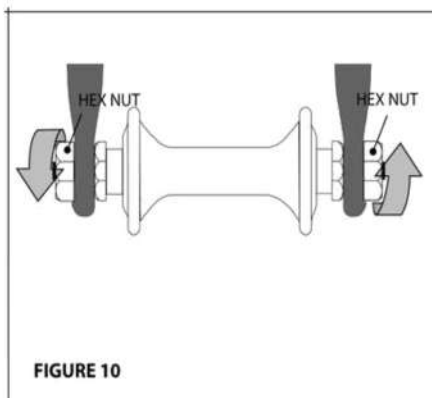


FIGURE 10

Your bicycle may be equipped with a different securing method for the front wheel than for the rear wheel. Discuss the wheel securing method for your bicycle with a qualified bike mechanic. 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 help from a qualified bike mechanic to instruct you in correct wheel removal and installation.

1. Front Wheel Secondary Retention Devices

Most bicycles have front forks which utilize a secondary wheel retention device to reduce the risk of the wheel disengaging from the fork if the wheel is incorrectly secured. Secondary retention devices are not a substitute for correctly securing your front wheel.

Secondary retention devices fall into two basic categories:

- The clip-on type is a part which the manufacturer adds to the front wheel hub or front fork.
- The integral type is molded, cast or machined into the outer faces of the front fork dropouts.



WARNING

DO NOT REMOVE OR DISABLE THE SECONDARY RETENTION DEVICE.

As its name implies, it serves as a back-up for a critical adjustment. If the wheel is not secured correctly, the secondary retention device can reduce the risk of the wheel disengaging from the fork. Removing or disabling the secondary retention device may also void the warranty. Secondary retention devices are not a substitute for correctly securing your wheel. Failure to properly secure the wheel can cause the wheel to wobble or disengage, which could cause you to lose control and fall, resulting in serious injury or death.

2. Wheels with cam action systems

There are currently two types of over-center cam wheel retention mechanisms: the traditional over-center cam (fig. 8a) and the cam-and-cup system (fig. 8b). Both use an over-center cam action to clamp the bike's wheel in place. Your bicycle may have a cam-and-cup front wheel retention system and a traditional rear wheel cam action system.

a. Adjusting the traditional cam action mechanism (fig. 8a)

The wheel hub is clamped in place by the force of the over-center cam pushing against one dropout and pulling the tension adjusting nut, by way of the skewer, against the other dropout. The amount of clamping force is controlled by the tension adjusting nut. Turning the tension adjusting nut clockwise while keeping the cam lever from rotating increases clamping force; turning it counter clockwise while keeping the cam lever from rotating reduces clamping force. Less than half a turn of the tension adjusting nut can make the difference between safe clamping force and unsafe clamping force.

WARNING

THE FULL FORCE OF THE CAM ACTION IS NEEDED TO CLAMP THE WHEEL SECURELY.

Holding the nut with one hand and turning the lever like a wing nut with the other hand until everything is as tight as you can get it will not clamp a cam action wheel safely in the dropouts.

b. Adjusting the cam-and-cup mechanism (fig. 8b)

The cam-and-cup system on your front wheel will have been correctly adjusted for your bicycle by a qualified bike mechanic. And check the adjustment oftenly.

3. Removing And Installing Wheels

WARNING

IF YOUR BIKE IS EQUIPPED WITH A HUB BRAKE SUCH AS A REAR COASTER BRAKE, FRONT OR REAR DRUM, BAND OR ROLLER BRAKE ; OR IF IT HAS AN INTERNAL GEAR REAR HUB, DO NOT ATTEMPT TO REMOVE THE WHEEL .

The removal and re-installation of most hub brakes and internal gear hubs requires special knowledge. Incorrect removal or assembly can result in brake or gear failure, which can cause you to lose control and fall.

CAUTION

If your bike has a disc brake, exercise care in touching the rotor or caliper. Disc rotors have sharp edges, and both rotor and caliper can get very hot during use.

a. Removing a disk brake or rim brake front wheel

- (1) If your bike has rim brakes, disengage the brake's quick-release mechanism to increase the clearance between the tire and the brake pads.
- (2) If your bike has cam action front wheel retention, move the cam lever from the locked or CLOSED position to the OPEN position (figs. 8a & b). If your bike has through bolt or bolt-on front wheel retention, loosen the fastener (s) a few turns counter-clockwise using an appropriate wrench, lock key or the integral lever.
- (3) If your front fork has a clip-on type secondary retention device, disengage it. If your front fork has an integral secondary retention device, and a traditional cam action system (fig. 8a) loosen the tension adjusting nut enough to allow removing the wheel from the dropouts. If your front wheel uses a cam-and-cup system, (fig.8b) squeeze the cup and cam lever together while removing the wheel. No rotation of any part is necessary with the cam-and-cup system.

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

b. Installing a disk brake or rim brake front wheel

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.

- (1) If your bike has cam action front wheel retention, move the cam lever so that it curves away from the wheel (fig. 8b). This is the OPEN position. If your bike has through bolt or bolt-on front wheel retention, go to the next step.
- (2) 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 (fig. 8a & b). If your bike has a clip-on type secondary retention device, engage it.
- (3) If you have a traditional cam action mechanism: holding the cam lever in the ADJUST position with your right hand, tighten the tension adjusting nut with your left hand until it is finger tight against the fork dropout (fig. 8a). If you have a cam-and-cup system: the nut and cup (fig. 8b) will have snapped into the recessed area of the fork dropouts and no adjustment should be required.
- (4) While pushing the wheel firmly to the top of the slots in the fork dropouts, and at the same time centering the wheel rim in the fork:
 - (a) With a cam action system, move the cam lever upwards and swing it into the CLOSED position (fig. 8a & b). The lever should now be parallel to the fork blade 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.
 - (b) With a through-bolt or bolt-on system, tighten the fasteners to the torque specifications in Appendix D or the hub manufacturer's instructions.
- (5) With a through-bolt or bolt-on system, tighten the fasteners to the torque or the hub manufacturer's instructions.



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 fork blade 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.

- (6) If you disengaged the brake quick-release mechanism in 3. a. (1) above, re-engage it to restore correct brake pad-to-rim clearance.
- (7) Spin the wheel to make sure that it is centered in the frame and clears the brake pads; then squeeze the brake lever and make sure that the brakes are operating correctly.

C. Removing a disk brake or rim brake rear wheel

- (1) 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 with a qualified bike mechanic or the hub manufacturer's instructions before attempting to remove the rear wheel.
If you have a single-speed bike with rim or disk brake, go to step (4) below.
- (2) If your bike has rim brakes, disengage the brake's quick-release mechanism to increase the clearance between the wheel rim and the brake pads.

NOTE:

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

- (3) On a derailleur gear system, pull the derailleur body back with your right hand.
- (4) 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.
- (5) Lift the rear wheel off the ground a few inches and remove it from the rear dropouts.

d. Installing a disk brake or rim brake 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 (see fig. 8 a & b). The lever should be on the side of the wheel opposite the derailleur and freewheel 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 in to 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 (fig. 8 a & b). 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 seat stay or chainstay 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) If you disengaged the brake quick-release mechanism in 3. c. (2) above, re-engage it to restore correct brake pad-to-rim clearance.
- (9) Spin the wheel to make sure that it is centered in the frame and clears the brake pads; then squeeze the brake lever and make sure that the brakes are operating correctly.

4. B. Seat Post Cam

Action Clamp

Some bikes are equipped with a cam action seat post binder. The seat post cam action binder works exactly like the traditional wheel cam action fastener, while a cam action binder looks like a long bolt with a lever on one end and a nut on the other, the binder uses an over-center cam action to firmly clamp the seat post (see fig. 8a).

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 qualified bike mechanic 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.

Adjusting The Seat Post Cam Action Mechanism

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

WARNING

THE FULL FORCE OF THE CAM ACTION IS NEEDED TO CLAMP THE SEAT POST SECURELY.

Holding the nut with one hand and turning the lever like a wing nut with the other hand until everything is as tight as you can get it will not clamp the seat post safely.

WARNING

If you can fully close the cam lever without wrapping your fingers around the seat post or a frame tube for leverage, and the lever does not leave a clear imprint in the palm of your hand, the tension is insufficient. Open the lever; turn the tension adjusting nut clockwise a quarter turn; then try again.

4. C – Brakes

There are three general types of bicycle brakes: rim brakes, which operate by squeezing the wheel rim between two brake pads; disc brakes, which operate by squeezing a hub-mounted disc between two brake pads; and internal hub brakes. All three can be operated by way of a handlebar mounted lever. On some models of bicycle, the internal hub brake is operated by pedaling backwards. This is called a Coaster Brake and is described in “Coaster Brakes” in this section.

WARNING

1. Riding with improperly adjusted brakes or worn brake pads, or wheel on which the rim wear mark is visible 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. Some bicycle brakes, such as disc brakes (fig. 11) and V-type brakes (fig. 12), are extremely powerful. Take extra care in becoming familiar with these brakes and exercise particular care when using them.
4. Some bicycle brakes are equipped with a brake force modulator, a small, cylindrical device through which the brake control cable runs and which is designed to provide a more progressive application of braking force. A modulator makes the initial brake lever force more gentle, progressively increasing force until full force is achieved. If your bike is equipped with a brake force modulator, take extra care in becoming familiar with its performance characteristics.

5. 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.
6. See the brake manufacturer's instructions for installation, operation and care of your brakes. If you do not have the manufacturer's instructions, find a qualified bike mechanic for help, or contact the brake manufacturer.
7. If replacing worn or damaged parts, use only manufacturer approved genuine replacement parts.

1. 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.

Different countries have different traditions or rules to put the left and right levers for brakes. Must 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, find a qualified bike mechanic for help before riding the bike. The lever reach may be adjustable; or you may need a different brake lever design.

Most rim brakes have some form of quick-release mechanism to allow the brake pads to clear the tire when a wheel is removed or reinstalled. When the brake quick release is in the open position, the brakes are inoperative. Ask your dealer to make sure that you understand the way the brake quick release works on your bike (see figs. 12, 13, 14 & 15) and check each time to make sure both brakes work correctly before you get on the bike.

2. 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. To make sure that you have maximum friction available, keep your wheel rims 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.

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.

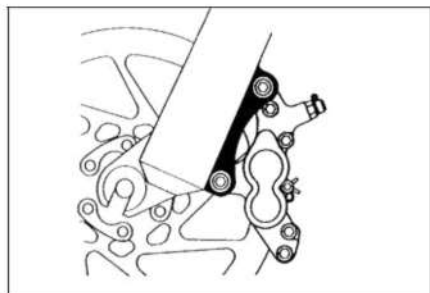


Figure 11.

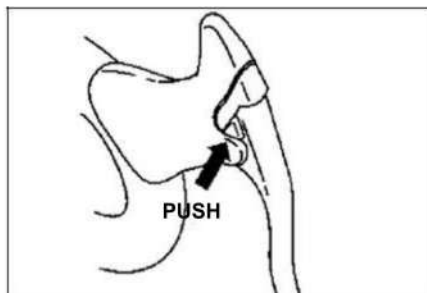


Figure 15.

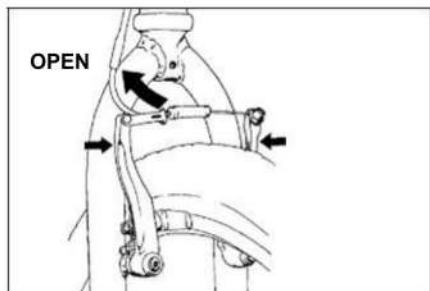
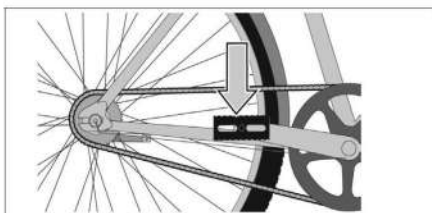


Figure 12.

Coaster Brakes



1. How the coaster brake works

The coaster brake is a sealed mechanism which is a part of the bicycle's rear wheel hub. The brake is activated by reversing the rotation of the pedal cranks (indicated by arrow above). Start with the pedal cranks in a nearly horizontal position, with the front pedal in about the 4 o'clock position, and apply downward footpressure on the pedal that is to the rear. About 1/8 turn rotation will activate the brake. The more downward pressure you apply, the more braking force, up to the point where the rear wheel stops rotating and begins to skid.

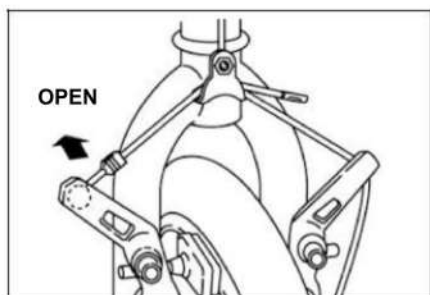


Figure 13.

WARNING

Before riding, make sure that the brake is working properly. If it is not working properly, have the bicycle checked carefully with a qualified bike mechanic before you ride it.

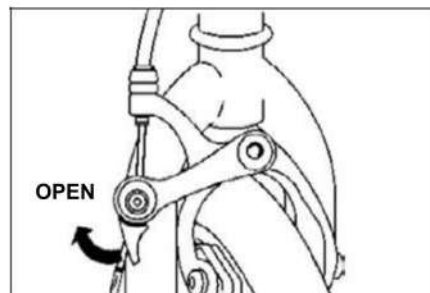


Figure 14.



WARNING

If your bike has only a coaster brake, ride conservatively. A single rear brake does not have the stopping power of front- and rear brake systems. If your bike is a fixed-gear bike, it is working similar as coaster brake bike. And it is strongly required not to ride the bike in bad condition place or for competition, as you may loss control of the bike, which would bring serious injury even death.

2. Adjusting your coaster brake

Coaster brake service and adjustment requires special tools and special knowledge. Do not attempt to disassemble or service your coaster brake. Take the bicycle to a bike shop for coaster brake service.

3. D – Shifting Gears

Your multi-speed bicycle will have a derailleur drivetrain (see 1. below), an internal gear hub drivetrain (see 2. below) or, in some special cases, a combination of the two.

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
- usually a front derailleur
- one or two shifters
- one, two or three front sprockets called chainrings
- a drive chain

a. Shifting Gears

There are several different types and styles of shifting controls: levers, twist grips, triggers, combination shift/brake controls, push-buttons, and so on. Try to get fully understanding for the type of shifting controls that are on your bike, and understand how they work properly. 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. What’s confusing is that what’s happening at the front derailleur is the opposite of what’s happening at the rear derailleur.

For example, you can select a gear which will make pedaling easier on a hill (make a downshift) in one of two ways: shift the chain down the gear “steps” to a smaller gear at the front, or up the gear “steps” to a larger gear at the rear. So, at the rear gear cluster, what is called a downshift looks like an upshift. The way to keep things straight is to remember that shifting the chain in towards the centerline 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.

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. Shifting the Front Derailleur:

The front derailleur, which is controlled by the left shifter, shifts the chain between the larger and smaller chainrings. Shifting the chain onto a smaller chainring makes pedaling easier (a downshift). Shifting to a larger chainring makes pedaling harder (an upshift).

d. Which gear should I be in?

The combination of largest rear and smallest front gears (fig.16) is for the steepest hills. The smallest rear and largest front combination is for the greatest speed. 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 not to use either the “smallest-to-smallest” or “largest-to-largest” gear combinations because they can cause unacceptable stress on the drive change. 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. Find a qualified bike mechanic for help.

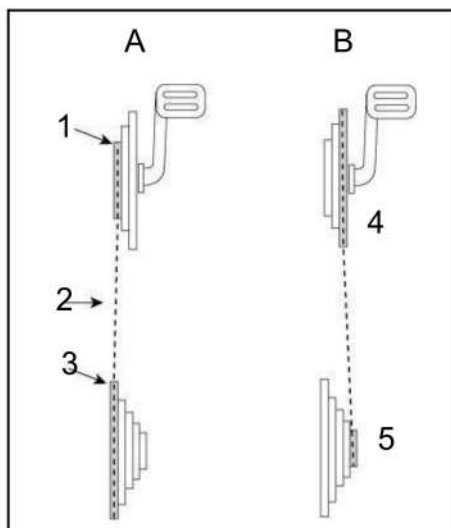


Figure 16.

- | | |
|-------------------|-------------------|
| A. Hills | B. Greatest Speed |
| 1. Smallest front | 4. Largest front |
| 2. Chain | 5. Smallest rear |
| 3. Largest rear | |

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.

e. 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 bike shop, or find a qualified bike mechanic to have it adjusted.

2. How an internal gear hub drivetrain works

If your bicycle has an internal gear hub drivetrain, the gear changing mechanism will consist of:

- a 3, 5, 7, 8, 12 speed or possibly an infinitely variable internal gear hub
- one, or sometimes two shifters
- one or two control cables
- one front sprocket called a chainring
- a drive chain

a. Shifting internal gear hub gears

Shifting with an internal gear hub drivetrain is simply a matter of moving the shifter to the indicated position for the desired gear. After you have moved the shifter to the gear position of your choice, ease the pressure on the pedals for an instant to allow the hub to complete the shift.

b. Which gear should I be in?

The numerically lowest gear (1) is for the steepest hills.

The numerically largest gear is for the greatest speed.

Shifting from an easier, “slower” gear (like 1) to a harder, “faster” gear (like 2 or 3) is called an upshift. Shifting from a harder, “faster” gear to an easier, “slower” gear is called a downshift. It is not necessary to shift gears in sequence. Instead, find the “starting gear” for the conditions—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 gears. 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. Find a bike shop or a skilled bike mechanic for help.

c. 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 your dealer to have it adjusted.

4. E – Pedals

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.

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 choose to ride with shin pads.

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. Your 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.

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 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.

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 your dealer or contact the manufacturer.

4. F –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.

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 your bicycle carefully 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.

4. G Tires and Tubes

1. 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, your dealer can help you select the most appropriate design. 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.

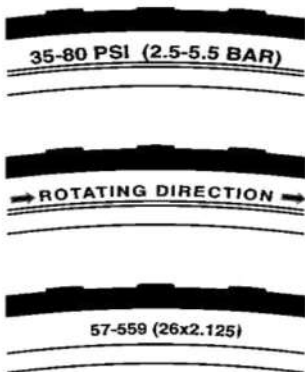


Figure 17.

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.

Make clear for the best tire pressure for the kind of riding you will most often do, and have the tires be inflated that pressure properly. 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.

2. Tube Valves

There are primarily two kinds of bicycle tube valves: Schrader Valve (A/V) and Presta Valve (F/V). 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. 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 some bike shops) 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.

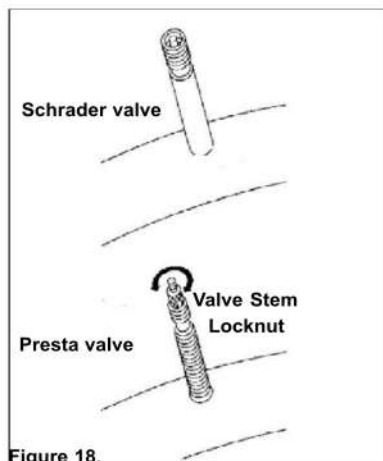


Figure 18.

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

PART II

Section A. Important

Safety Information

A Wide Range Of Bicycling Injuries Are Possible

Many hazards are described, and we have attempted to explain how to avoid or minimize the dangers. Because any fall can result in serious injury, paralysis or death we do not repeat the warning of these potential consequences every time we call attention to a hazard. Some low speed falls may result in serious injuries, and some wild high speed falls may result in none. The reality is that the exact nature of the consequences of a fall or accident is not predictable.

Bicycles Cannot Protect You

Bicycles are lightweight, human-powered vehicles. 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.

Warning Label

We urge you to locate the warning label on your bike. It contains important information that you and anyone else.

who rides your bike should read and follow.

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
- The 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 owner's manual supplements and instructions that came with your bicycle are essential to your safety and part of the learning process.
- Riding within your own unique capabilities and considering the conditions where you are riding.

Riding At Night, Dusk, Dawn



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.

Required Reflectors

The location and type of each reflector on your bike is required by a national authority, your bike must be delivered with: 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.

DO NOT REMOVE, BLOCK, OR COVER REFLECTORS.

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.

Mountain Biking At Night:

Mountain biking at night is risky. Take the challenges outlined in SECTION C. 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. You can find a battery or generator powered lighting system appropriate to your needs in some bike shops.

Flashing (blinker) and Strobe Lighting

We also strongly urge you to use a flashing light or strobe. All of us at who ride at night or in conditions of lower visibility use flashers. They can save your life. (Yeah, we know there may be legal issues with flashers in some areas. They can save your life. Enough said.)

PART II

Child Carriers



WARNING

CHILD CARRIERS ADD WEIGHT AND RAISE THE CENTER OF GRAVITY, MAKING BALANCE AND CORNERING MORE DIFFICULT. IF YOU LOOSE CONTROL, YOU AND YOUR CHILD PASSENGER CAN BE SEVERELY INJURED OR KILLED.

We urge you NOT to install child carriers on bicycles. If you choose to install a child carrier, have an experienced bicycle mechanic install it. Install only on a compatible bicycle. If you insist on using a child carrier we urge that you confirm with both the carrier rack manufacturer and the child carrier manufacturer that the two products are safely compatible. Always use caution when riding with a child carrier.

Some saddles are equipped with coil springs. If you use a rear rack mounted child carrier there is a risk that a child's fingers could be injured if trapped in the coil springs when the rider hits a bump and the springs compress. Be sure that the child cannot reach the springs when properly strapped in the carrier.

We encourage use of trailers for children. Be very careful when towing a trailer. Remember that braking distances increase, and the trailer will track inside the line of the bicycle when making turns. Children should always wear helmets when riding in a child carrier or trailer. Use of bicycle helmets on children is required by law in many areas.

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.

Bar Ends

We urge consumers not to install “Bar Ends” on bicycles. Some handlebars are designed to take the added stress of bar ends, others are not. Very lightweight handlebars may be particularly poorly suited for bar ends. If you want bar ends, consult your bar-end seller about suitable choices, read and follow instructions and warnings that accompany the handlebars and bar ends, and inspect the handlebars and bar ends regularly.

Installing Accessories

Have all accessories mounted by a skilled bike mechanic. Be sure that any accessory assembled to your bike does not block or interfere with nationally required reflectors or lights.



WARNING

INCOMPATIBLE ACCESSORIES OR POORLY OR IMPROPERLY MOUNTED ACCESSORIES CAN ADVERSELY AFFECT THE PERFORMANCE-OF YOUR BICYCLE AND MAY BE UNSAFE.

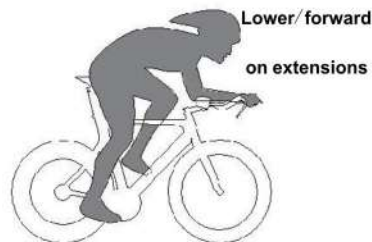
Aerodynamic Handlebars

Aerodynamic or “Triathlon” handlebar extensions are fitted to some triathlon or racing bikes. They are also added by customers. Understand that when riding on these extensions your steering and braking are adversely affected. When on the extensions, most riders find it hard to look back over their shoulder without swerving, inadvertently steering. Some riders find it harder to move their head/ neck to see forward. Be sure to NOT practice riding with aero handlebar extensions on hazard and traffic free roads. Practice the transition from having your hands on the extensions to having your hands on the regular handlebars and brake levers.

CONVENTIONAL ROAD



AERODYNAMIC extensions



WARNING

DO NOT RIDE ON THE AERO HANDLEBAR EXTENSIONS IN TRAFFIC OR ON DIFFICULT ROADS.

Ride on the aero handlebar extensions only when the road is clear of traffic and hazards and you have a long line of sight. When using the extensions understand that you are compromising steering and braking in favor of speed. If you need to take evasive steering or braking action while on the extensions you could have an accident, with risk of serious injury, paralysis or death.

Aerodynamic handlebars and extensions are a design trade-off which positions you further forward than on a conventional road bike, so:

- Overly hard use of the front brakes will pitch you forward, off the bike, more easily.
- Rear braking performance will not equal that of a conventional road bike.

When braking hard on any bike, including time trial or triathlon, you must shift weight back to allow front brake use without pitching yourself forward, off the bike. Shifting weight back allows more rear braking effect before the rear wheel begins to skid when braking hard, or braking on a steep downhill.

Aerodynamic handlebars and extensions are intended for racing and competition in time trial and triathlon and are poorly suited for riding in cities or congested urban areas where conflicts with cars will frequently require panic braking.

PART II

About Shimmy

Some cyclists have experienced disturbing “shimmy” or “vibration” at certain speeds. This symptom is rarely reported and there is no agreement among experts as to the cause. Among the proposed causes of shimmy are: a loose headset, frame alignment problems, weight of front wheel magnets for cycle computers, and spoke tension.

Larger riders on larger frames are thought by some to be more likely to experience such vibration. If you experience such a vibration, gently apply the brakes and slow down. Another suggestion is to press your leg against the top tube as you slow down.



WARNING

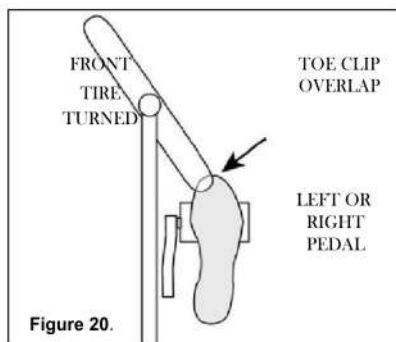
IF YOU EXPERIENCE “SHIMMY,” DO NOT CONTINUE TO RIDE YOUR BIKE. TAKE THE BICYCLE TO A BIKE SHOP FOR INSPECTION.

Toe Overlap or toe clip overlap

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.

Please consult with a qualified bike mechanic on the simple steps you must follow to avoid an accident.

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 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.

ASK BIKE SHOPS OR QUALIFIED BIKE MECHANICS FOR THE RIGHT TIRES FOR YOUR BIKE AND ITS PARTICULAR COMPONENTS !

YOU CAN BE SEVERELY INJURED , 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 lightweight 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 the seller.

PART II

How to Check

Wheel Rim Wear

Check the condition of wheel rims wear before every ride.

It is important to your safety, that you also check the surface wear of the wheel rims (in addition to brake pad wear). This is the area of the wheel where the brake pads contact the rim. Rims can wear out.

How Can You Check Rim Wear?

Some wheels have wear indicators built in. Some indicators are depressions in the rim lower than the surface where the pads touch. When the surface reaches this depression the wheel is worn out. Other indicators are visible markings or signs that are

exposed to view when the braking surface is worn out. Consult the wheel manufacturer's instructions / manuals or a skilled bike mechanic for information on how to check wear for your specific wheels.

WARNING

Bicycle wheel rims are subject to wear and damage. A worn-out or damaged wheel rim has reached its maximum usable life and must be replaced.

- Riding on unusable "worn-out" or damaged wheels can lead to braking or wheel failure.
- Replace your wheel when they become worn-out or damaged.
- Do not ride your bike when the wheels are damaged or worn-out.
- Ask a qualified bike mechanic for help with inspecting the rim wear of your wheels.

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

WARNING

Some road bikes are equipped with disc brakes. Relative to conventional rim brakes, disc brakes are less affected by water, do not wear or heat the rims and therefore are more consistent. Disc brakes also may be more powerful.

To minimize risk of injury or accidents:

- Understand that road bikes have a relatively small tire contact patch (part of the tire that touches the road). In order to apply the brakes safely and effectively, you may need more or less braking force in different situations. You need to take into account various road and weather conditions that can affect traction.
- Disc brakes are excellent, but not some kind of magic. Take some time riding your new disc brake road bike in lower risk circumstances to get used to the feel and performance of the disc brakes and tires.

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

UNDERSTANDING DISC BRAKES ON Road Bikes



Brake Power Modulators

Your bike may be equipped with a brake modulator, a device installed between the front brake lever and the front brake to reduce initial front braking force. (Brake power modulators are also used on the rear brake of some bicycles.)

If a rider applies the front brake too strongly or too suddenly, these devices can help reduce the risk of locking the front wheel or throwing the rider. Once the modulator device is bottomed out, the front brakes have the same power, and the same risks of overly hard use, as brakes without a modulator. Modulators are a small help in giving a rider more of a chance to react correctly. Modulators are not a substitute for practicing and learning to brake correctly.



WARNING

A BRAKE MODULATOR WILL NOT PREVENT WHEEL LOCK UP OR BEING THROWN OFF THE BIKE DUE TO OVERLY HARD OR FAST OR ABRUPT APPLICATION OF THE BRAKES.

It is important that you understand modulators are not an intelligent, sophisticated system. Modulators are NOT anti-lock braking systems (ABS). Bicycle brake modulators are not like ABS in a car. Unlike automotive ABS there is not an intelligent system of sensors and computer control. Unlike an ABS system in a car you cannot just jam on the brakes and let the system take over. There is no system to think or act for you. Some people, including sales people, may try to explain brake modulators on bicycles by saying that they are "like ABS". This is misleading and inaccurate.

We urge you to ask a skilled bike mechanic to confirm if you have a brake modulator on your bike.

We urge you to ask a skilled bike mechanic to demonstrate how it works. We urge you to work with the front brake lever while standing still to understand how it works. We urge you to read any brake and brake modulator instructions that came with your bike.

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 ask a qualified bike mechanic to have your bike's brakes installed and adjusted properly.

Aftermarket Power Systems



WARNING

DO NOT INSTALL A POWER SYSTEM (GAS OR ELECTRIC TYPE) ONTO YOUR BIKE.

Your bike may not have been not designed or intended for use with any type of aftermarket power system.

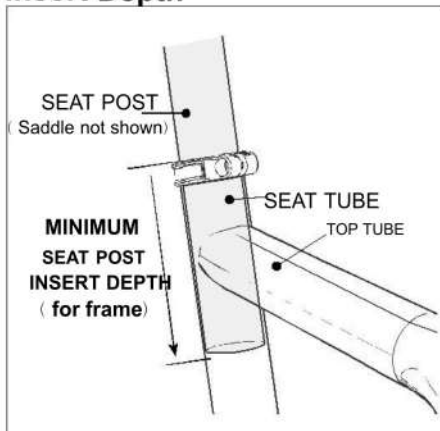
There are many types of power systems from many different manufacturers. We simply can't predict what all can go wrong by installing one.

We can say that installing an aftermarket power system represents a MAJOR modification of your bike. It will change the way your bike handles and fundamentally alter its operation.

When combined with your bike, the power system can become dangerous to operate.

For example, the brakes may not be adequate for higher speeds.

Minimum Seat Post Insert Depth



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 only rely on this marking as an indication of the proper minimum seat post insertion depth, but also check the frame, if there has a mark for minimum seat post insertion depth. Please follow the deepest one between these two minimums.

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

PART II

GRAVITY. Freeriding & Downhill Riding

WARNING

Gravity. FREERIDING AND OTHER FORMS OF "EXTREME RIDING" ARE EXTREMELY DANGEROUS. YOU CAN BE SEVERELY INJURED OR KILLED IN A SERIOUS ACCIDENT.

Gravity, Freeriding, jumping, hucking, dirt jumping, mountaingroup, downhill, slalom, slopestyle, urban or street riding or other evolving forms of extreme or hard core mountain biking are inherently dangerous and can lead to serious accidents.

Wear all safety gear and be sure your bike is in excellent condition. Follow all the instructions and warnings below.

These steps will reduce, but not eliminate, the inherent risks. Even with state of the art protective safety gear you could be seriously injured, paralyzed or killed. If you do not want to take these risks, do not engage in this type of riding.

But what the videos and bike magazines and ads don't always tell you is that extreme riding takes an amazing amount of skill. Some of the riders you see are well-paid pros who have gradually built up their skills through endless hours of practice, and who have also had their share of stitches, concussions and busted bones (and bikes). Others are daredevils who have chosen to accept or ignore the risks. Would you allow anyone to say that you are so weak in the head, and have such poor judgment that you copy those you see in the media without thought of the serious risks?

The stakes are high if you screw up. Realize too late that you aren't up to the challenge, and you run the risk of major injury or even - say it aloud - death, paralysis. In short, extreme riding carries a high degree of fundamental risk, and you bear the ultimate responsibility for how you ride and what you attempt to pull off. Do you want to avoid these significant risks? Then do not ride this way.

section G.

PRE-RIDECHECKLIST



WARNING

FOLLOW THIS CHECKLIST BEFORE EVERY RIDE. IF YOU HAVE ANY REASON TO SUSPECT THAT YOUR BICYCLE IS NOT FUNCTIONING PROPERLY, DO NOT RIDE IT.

Are you wearing a helmet and other appropriate equipment and clothing, such as protective glasses and gloves?

Do not wear loose clothing that could become entangled in the bicycle

Are your seatpost and stem 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 in the seat tube.

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.

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.

Are your tires properly inflated?

Tires must be inflated to the recommended pressure.

Are your wheels true?

Lift each end of the bike and spin each wheel. Does the space between the rim and the brake pads, or the tire and the frame, remain nearly the same size as the wheel turns?

Are your spokes tight?

Are your wheels' quick-releases properly

fastened? Be sure to read the section on proper operation of quick-release skewers.

Are your front and rear brakes functioning properly?

With V-brakes, the quick release "noodle" must be properly installed. With cantilever brakes, the quick release straddle cable must be properly attached.

With caliper brakes the quick release lever must be closed. With any rim brake, the brake pads must make firm contact with the rim without the brake levers hitting the handlebar grip.

With hydraulic disc brakes, check that the lever feels firm, does not move too close to the handlebar grip, and there is no evidence of leaking brake fluid. With cable actuated disc brakes, check that the lever feels firm and does not move too close to the handlebar grip. With any disc brakes, the brake pads must make firm contact with the rotor without the brake levers hitting the handlebar grip

How do your clipless pedals work today?

Clip in and out of your pedals before you begin. Experienced cyclists do. The connection between cleat and pedal is affected by dozens of factors including dirt, mud, lubrication, spring tension and wear. By clipping in and out you will check the function and have a fresh memory of how they feel.

How recently were your frame, fork and components inspected?

Never ride a frame, fork or components with any crack or damage.