

bicycle owner's manual

Owner's Responsibility

See inside back cover for Warranty Registration

This manual contains important information regarding the safe operation and maintenance of your bicycle . We urge you to read it and carefully follow the instructions. Instructions preceded by the words **NOTE, CAUTION,** or **WARNING** are of special significance.

NOTE: Instructions which are of special interest.

CAUTION: Instructions which if not followed, could result in mechanical damage or failure.

WARNING: You should pay special attention to these instructions since failure to do so may result in injury to the rider.

Theft and Warranty Information

- Record all numbers shown on the bicycle frame.
- Be sure to fill out and mail in the warranty card for our bicycle.

NOTE: The serial number is your proof of purchase. It is not on record where your bicycle was sold or manufactured.

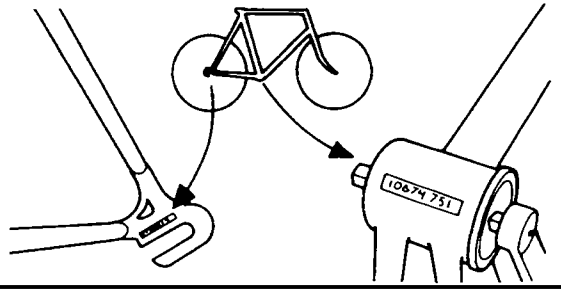
Keep the following information along with a copy of your sales receipt.
Serial Number: _____
Model Name: _____
Store Purchased From: _____
_____
Purchase Date: _____
Color: _____ Size: _____

- Lock your bicycle securely whenever it is out of your sight!
- Also, carefully follow the instructions in any additional literature supplied with this bicycle.

WARNING: Before your first ride, check the brakes and quick release units. Service, if necessary, is described in the maintenance section of this manual.

- Register your bicycle with your local law enforcement agency.
- Report any theft immediately.
- Add your bicycle to your homeowner's or apartment insurance policy.

Serial Number Locations



⚠ WARNING: MUST READ BEFORE RIDING

- Obtain, read and follow Owner's Manual.
- Check bike after assembly or any adjustments. Consult local bicycle shop with questions.
- Always wear a helmet.
- Children should never ride after dusk or at night.
- Before each ride, check that the front wheel is firmly attached and the brakes are in proper working condition.
- Adults should never ride after dusk or at night, unless absolutely necessary. If it is absolutely necessary, you must take steps to make yourself visible. (See Owner's Manual for requirements).
- On wet roads, apply brakes early and gradually.

Owner's Manual

for Multi-Speed Bicycles

This manual contains important safety, performance and maintenance information.
Read this manual before taking your first ride on your new bicycle, and keep the manual handy for future reference.

AN IMPORTANT MESSAGE TO PARENTS: This Manual contains important safety information. For your child's safety, it is your responsibility to review this information with your child and make sure that your child understands all warnings, cautions, instructions and safety topics. We recommend that you periodically review and reinforce the information in this Manual with younger riders.

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1. About this Manual

1. Why you should read this manual

This manual was written to help you get the most performance, comfort, enjoyment and safety when riding your new bike.

It's important for you to understand your new bike, its features and its operation, so that, from your first ride, you get maximum enjoyment with maximum safety. By reading this manual before you go out on your first ride, you'll know how to get the most from your new bicycle.

It is also important that your first ride on a new bicycle is taken in a controlled environment, away from cars, obstacles and other cyclists.

GENERAL WARNING: Bicycling can be a hazardous activity even under the best of circumstances. Proper maintenance of your bicycle is your responsibility as it helps reduce the risk of injury. This Manual contains many "Warnings" and "Cautions" concerning the consequences of failure to maintain or inspect your bicycle. 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 repeat the warning of possible injury or death whenever the risk of falling is mentioned.

2. When all else fails ... it's too late to read the manual

Even if you've been riding a bike all your life, you probably need an updating of your bicycling habits, knowledge and assumptions. Why? Because bicycles are going through some pretty dramatic changes in the technology which affects function, handling, comfort, performance and

3. A SPECIAL NOTE FOR PARENTS:

It is a tragic fact that most bicycle accidents involve children. As a parent or guardian, you bear the responsibility for the activities and safety of your minor child. Among these responsibilities are to make sure that the bicycle which your child is riding 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 before letting your child ride the bicycle. We have tried to make this manual interesting and instructive for both you and your child.

Make sure that your child always wears an approved bicycle helmet when riding (see Section 4 B).

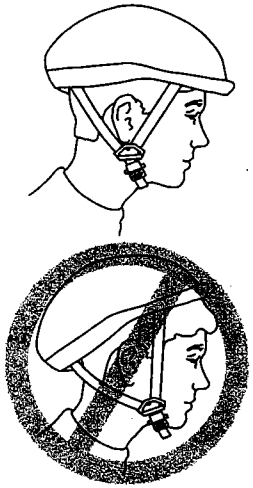


fig. 10 Wearing a Helmet

2. What it's called

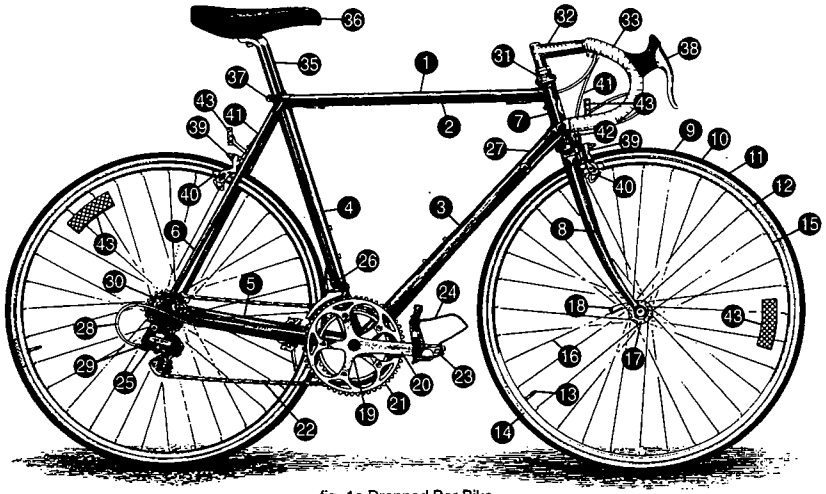


fig. 1a Dropped Bar Bike

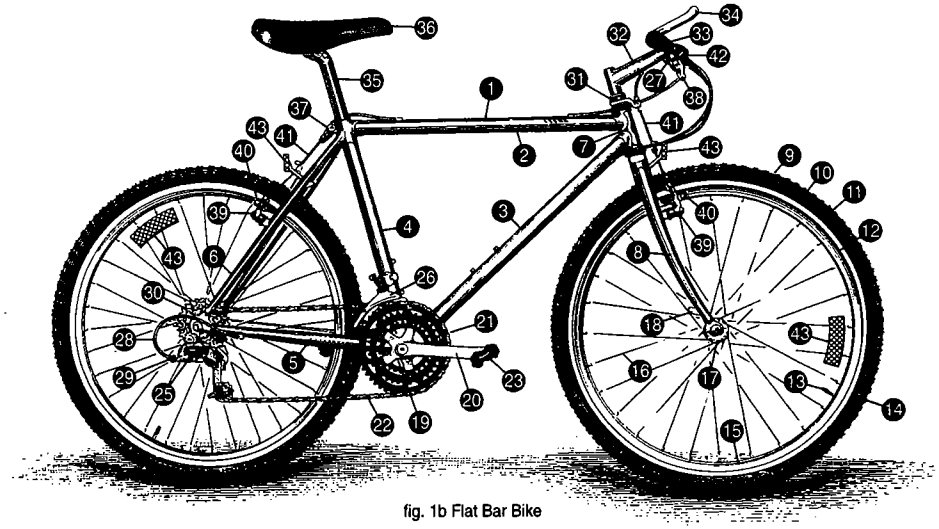


fig. 1b Flat Bar Bike

1	frame	12	sidewall	23	pedal	33	handlebar
2	top tube	13	valve stem	24	toeclip / strap	34	bar end extension
3	down tube	14	tube	25	rear derailleur	35	seatpost
4	seat tube	15	rim	26	front derailleur	36	saddle
5	chain stay	16	spokes	27	shifter	37	seat binder
6	seat stay	17	hub	28	shifter cable	38	brake lever
7	head tube	18	quick release	29	adjusting barrel	39	brake
8	fork	19	bottom bracket	30	freewheel/rear	40	brake shoe
9	wheel	20	crank		cluster/cassette	41	brake cable
10	tire	21	chainrings	31	headset	42	adjusting barrel
11	tread	22	chain	32	stem	43	reflector

3. What kind of a bike is it?

Adult bicycles can be broadly categorized into four types, according to the intended use for which the bike was designed: Road Bikes, Mountain Bikes, Cross Bikes and City or Cruiser Bikes. While there is a lot of use overlap in bike design, each type of bike is designed to provide optimum performance, comfort and safety under specific use conditions. Which type is your new bike?

The **Road Bike**, sometimes called a *racing bike* because it is derived from the bikes used by bicycle road racers and triathletes, is for fast travel, hard training and competition on paved surfaces. It is the lightest, most aerodynamic and "fastest" type of bike. Because it is generally ridden on relatively smooth paved roads, its frame is made as stiff and light as possible, and its frame geometry is designed to give it quick, very precise response to rider input. Its components, especially wheels, tend to be lighter than those for other categories, again because they are not designed to get banged around as much. Its dropped handlebars, sometimes equipped with aero bar extensions, are designed to give the rider good leverage for climbing and sprinting, and to position the rider in an aerodynamic "tuck" for speed. Its high-pressure, narrow tires reduce rolling resistance to a minimum.

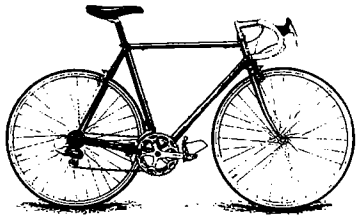


fig. 2 Road Bike

But: The ride tends to be too stiff for comfort on rougher surfaces. The frame and components are too light to take the pounding of off-road excursions. The handlebars position the rider in a way that many find uncomfortable for more casual riding. The narrow tires are not recommended for use on loose surfaces.

The Mountain Bike is designed to give the rider maximum control and durability on a wide variety of harsh terrain. Everything about the Mountain Bike is

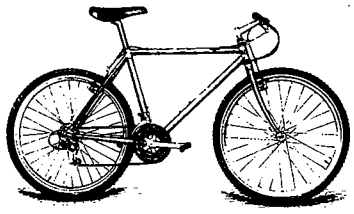


fig. 3 Mountain Bike

more rugged. Its frame geometry provides maximum ground clearance and allows you to quickly and easily shift your weight to change the balance of the bike as terrain conditions demand. Its wide, high-volume tires absorb shock and provide a bigger, more stable footprint on loose or slippery surfaces. Its wide-range gearing, usually with 18 or more speeds, provides the right choice for almost any condition. Many Mountain Bikes come equipped with suspension systems which help absorb the shocks and vibrations of rough trails.

But: A Mountain Bike is heavier than a road bike. Its wide tires have greater rolling resistance than road bike tires. While more comfortable for many people, the rider's more upright riding position is aerodynamically inefficient. A Mountain Bike is not the best choice for long, fast rides on paved surfaces.

NOTE: While the rugged appearance of Mountain bikes might suggest that they're indestructible, they are not. They are tough and sturdy; but as with any machine, abuse will soon take a toll on their ability to perform.

The Cross Bike, also often called a Hybrid, Cross Terrain Bike or Fitness Bike, is like a Swiss Army Knife: it's a versatile tool that does many things well. The Cross Bike is a good choice for the rider who isn't looking for the ultimate in performance either on or off the road, but who wants a bike that will handle paved roads, bike paths, graded fire trails and dirt roads. It's not as fast on pavement as a Road Bike; nor is it designed for hard off-road use on "single track" or rocky, rutted, rugged terrain like a Mountain Bike.

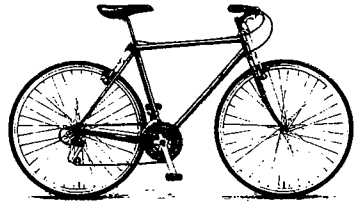
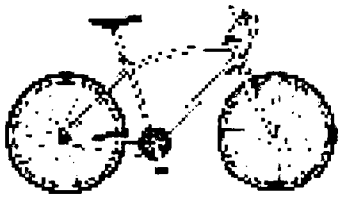


fig. 4 Cross Bike

By changing tires, handlebars and shifting and braking controls, your dealer can alter a Cross Bike's performance range to favor either paved road performance or dirt road performance, to suit your intended use.

The City Bike, also often called a Cruiser, is designed for comfortable, low-maintenance, casual riding. It is often equipped with three, five, seven or more gears which are housed in the rear wheel hub. Its frame is designed for comfort rather than for high performance, and its fat tires are designed for solid, rather than loose, surfaces. The Cruiser is ideal for around town, for gently rolling or flat rural roads, for a ride around the park, or for a quick trip to the store.



4. Fit and Safety

A. Fit

Make sure the bike fits. A bike that's too big or too small for the rider is harder to control and can be uncomfortable.

WARNING: If your bicycle does not fit properly, you may lose control and fall. If your new bike doesn't fit, ask your dealer to exchange it before you ride it.

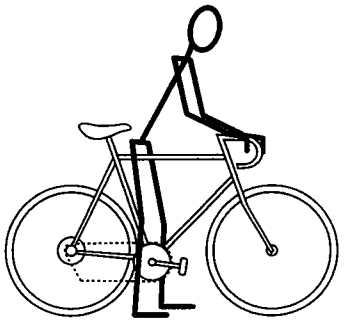


fig. 5 Standover Height

Frame size: Your dealer will have recommended the best frame size for you, based on the information provided. If you picked your own bike at the dealership, your dealer took the time to fit you to the correct frame size at the time. If someone else selected the bike for you, as a gift, for example, it's important for you to make sure that it fits before you ride it.

The first check for correct size is **standover height.** Standover height is the basic element of bike fit. It is the distance from the ground to the top of the top tube at that point where your crotch would be if you were straddling the bike by standing half way between the saddle and the handlebar stem. To check for safe standover height, straddle the bike while wearing the kind of shoes in which you'll be riding, and bounce vigorously on your heels. If your crotch touches the frame, the bike is too big for you. **Don't even ride the bike around the block.** A bike which you ride only on paved surfaces and *never, ever* take off-road should give you a minimum standover height clearance of one to two inches. A bike that you'll ride on unpaved surfaces should give you a minimum of three inches of standover height clearance. And a bike that you'll use for real mountain biking on difficult, rough terrain should give you four or more inches of clearance.

Saddle position: Correct saddle adjustment is an important factor in getting the most performance and comfort from your bicycle. Your dealer will have positioned the saddle where experience tells him most people find it comfortable. If you find the saddle position is not comfortable, there are adjustments you can make.

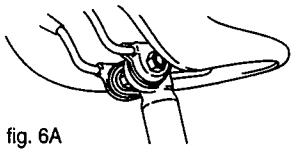


fig. 6A

Look at figures 6A, B and C, and determine which one illustrates the type of saddle attachment on your bicycle.

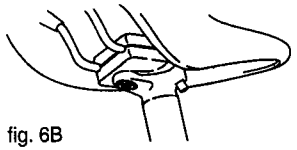


fig. 6B

A saddle can be adjusted in three directions:

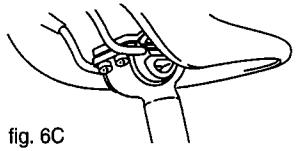


fig. 6C

1. Up and down adjustment. Your leg length determines the correct saddle height. The saddle is at the correct height for you when, while seated on the saddle and with the crank arms parallel to the seat tube, you can *just* reach the "down" pedal with one heel. To check for correct saddle height:

- 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 and just touching the center of the pedal, 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.

To adjust the saddle height, loosen the seat binder bolt (fig. 7A &B; see also Section 6. B on Seat Post Quick Releases) and move the seat post up or down as required. Then, make sure that the saddle is parallel to the top tube of the bike, and retighten the seat binder bolt tight enough so that you cannot twist the saddle out of alignment. Check the adjustment as described above.

Under no circumstances should the seat post project from the frame beyond its "Minimum Insertion" or "Maximum Extension" mark (fig. 8).

WARNING: If your seat post projects from the frame beyond the Minimum Insertion or Maximum Extension mark (see fig. 8) the seat post may break, which could cause you to lose control and fall.

2. Front and back adjustment. Loosen the saddle clamping mechanism (see fig. 6A, B or C) and slide the saddle back or forward on its rails. Start with the saddle clamped in about the middle, then adjust forward or back until you find the position which is most comfortable for you. Then, retighten the saddle clamping mechanism as tight as you can.

3. **Saddle tilt adjustment.** Most people prefer a horizontal saddle; but some riders prefer to have the saddle nose tilted up just a little, and others prefer it to be tilted down just a little. You can adjust saddle tilt by loosening the saddle clamping mechanism, tilting the saddle to the desired position, and retightening the saddle clamping mechanism tight enough so that you cannot move or jiggle the saddle.

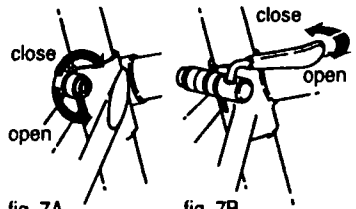


fig. 7A Standard Binder
fig. 7B QR Binder

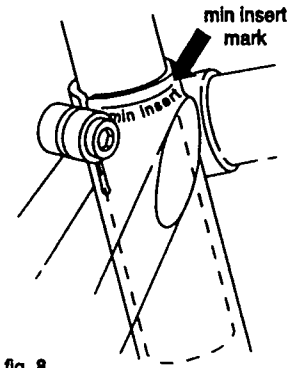


fig. 8

Very small changes in saddle position can have a substantial effect on performance and comfort. Consequently, whenever you make a change to your saddle position, make only one directional change at a time, and make the changes in small increments until you have found the position at which you are most comfortable.

WARNING: After any saddle adjustment, be sure to tighten the saddle adjusting mechanism properly 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. Your dealer can help you select a saddle which, when correctly adjusted for your body and riding style, will be comfortable.

⚠ CAUTION: It has been alleged 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. If your saddle causes you pain or numbness, adjust the saddle position and your riding position. If pain or numbness persist, talk to your dealer about fitting a different saddle to your bicycle.

Handlebar height and angle: If your bike is equipped with a stem which clamps directly on to the outside of the steerer tube, your dealer may be able to change bar height by moving height adjustment spacers from below the stem to above the stem, or vica versa. Otherwise, you'll have to get a stem of different length or rise. Consult your dealer. **Do not attempt to do this yourself, as it requires special knowledge.**

But on many bikes, you can raise or lower your handlebars a bit by adjusting stem height yourself. Loosen the stem binder bolt by turning it counterclockwise three or four full turns. If the bolt rises but the stem doesn't, get a piece of wood or a soft mallet and give the bolt a good whack to release the wedge. Adjust the stem position as desired, align stem with tire, and retighten the binder bolt tight enough so that you cannot twist the stem and handlebars out of alignment.

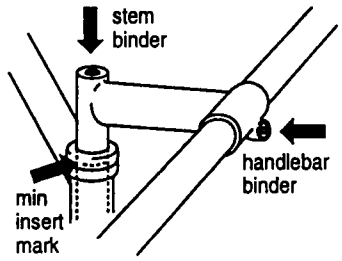


fig. 9

Under no circumstances should the stem be retightened with its "Minimum Insertion" or "Maximum extension" mark visible.

Now check to make sure that the handlebars rotate freely in both directions without the brake cables catching or binding on anything.

CAUTION: On some bicycles, changing the stem or stem height can affect the tension of the front brake cable, locking the front brake or creating sufficient cable slack to make the front brake inoperable. If the front brake shoes move in towards the wheel rim or out away from the wheel rim when you change the stem or stem height, take your bicycle to your dealer for correct brake adjustment before riding it.

WARNING: The stem's Minimum Insertion Mark must not be visible above the top of the headset (see fig. 9). 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.

You can change the angle of the handlebar or bar end extensions by loosening their binder bolt, rotating the bar or extension to the desired angle, recentering it and retightening the binder bolt tight enough so that the bars or extensions can't move in relation to each other and the stem.

WARNING: Failure to properly tighten the stem binder bolt, the handlebar binder bolt or the bar end extension clamping bolts 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, tighten the bolts.

Control position adjustments: The brake and shifting controls on your bike are positioned where they work best for most people. The angle of the controls and their position on the handlebars can be changed. Ask your dealer to show you how, or to make the adjustments for you.

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

WARNING: The shorter the brake lever reach, the more critical it is to have correctly adjusted brakes, so that full braking power can be applied within available brake lever travel. Brake lever travel insufficient to apply full braking power can result in loss of control, which may result in serious injury or death.

B. Safety Equipment

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

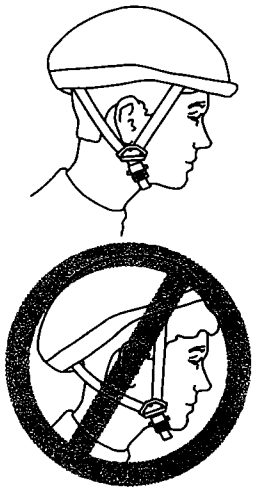


fig. 10 Wearing a Helmet

Helmet: While not all States require bicyclists to wear approved protective headgear, common sense dictates that you should wear an ANSI, Snell or other approved helmet whether the law requires it or not. Most serious bicycle injuries involve head injuries which might have been avoided if the rider had worn a helmet. Your dealer has a variety of attractive helmets, and can recommend one to suit your needs. But the "right" helmet is not just a fashion statement.

It must fit correctly, be worn correctly and be properly secured to do its real job. Ask your dealer to help you with the fit and adjustment of your helmet, or refer to the owner's manual provided with the helmet.

WARNING: Always wear an approved helmet when riding your bike. Always keep the chin strap securely buckled. Failure to wear a bicycle helmet may result in serious injury or death.

Reflectors: Reflectors are important safety devices which are designed as an integral part of your bicycle.

Federal regulations require every bicycle to be equipped with front, rear, wheel and pedal reflectors. The size, performance and location of each reflector is specified by the U.S. Consumer Products Safety Commission. The reflectors are designed to pick up and reflect street lights and car lights in a way that helps you to be seen and recognized as a moving bicyclist.

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

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

WARNING: Do not remove the front or rear reflector brackets from your bicycle. They are an integral safety device which protects 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 loose control and fall.

⚠ WARNING: Do not remove the reflectors 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. Remember: reflectors are not a substitute for lights. Always equip your bicycle with all state and locally mandated lights.

Lights: 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. Vehicle 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. Your bike dealer can recommend a battery or generator powered lighting system appropriate to your needs.

⚠ WARNING: Reflectors are not a substitute for proper lights. It is your responsibility to equip your bicycle with all 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.

Pedals: (See also Section 6.E and 6.F.) Some higher performance model bicycles come equipped with pedals that have sharp and potentially dangerous surfaces. These surfaces are designed to add safety by increasing adhesion between the rider's shoe and the bicycle 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. Your dealer can show you a number of options and make suitable recommendations.

Eye protection: Any kind of riding, but particularly off-road riding, involves airborne dirt, dust and bugs, so it's a good idea always to ride with protective eyewear -- tinted when the sun is bright, clear when it's not. Most bike shops carry protective fashion eyewear, some with interchangeable lens systems.

C. Mechanical Safety Check

Here is a simple, sixty-second **mechanical safety check** which you should get in the habit of making *every time* you're about to get on a bike.

Nuts, bolts & straps: 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 quick 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: Tires 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. See Section 6.G.1 for details and recommended tire pressures.

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

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

Brakes: Squeeze the brake levers. Are the brake quick releases closed? The straddle cable securely engaged? Are the brake shoes contacting 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.** See Sections 6.C.1 and 6.C.2 for details.

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

Quick Releases: Are the front wheel, rear wheel and seat post quick releases properly adjusted and in the locked position? See Section 6.A and 6.B for details.

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

Handlebar and saddle alignment: Are the saddle and handlebar stem correctly parallel to the bike's top tube and tight enough so that you can't twist them out of alignment?

Handlebar ends: Are the handlebar grips secure and in good condition? If not, replace them. Are the handlebar ends and extensions plugged? If not, plug them before you ride. On a mountain bike or Cross bike, are the bar end extensions tight enough so you can't twist them? If not, tighten them.

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

OK: now buckle on your helmet and enjoy your ride.

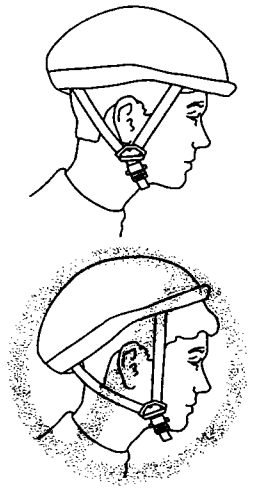


fig. 10 Wearing a Helmet

5. Riding Safely and Responsibly

NOTE: Like any sport, bicycling involves risk of injury and damage. By choosing to ride a bicycle, you assume the responsibility for that risk. Not the people who sold you the bike. Not the people who made it. Not the people who distribute it. Not the people who manage or maintain the roads or trails you ride on. You. So you need to know – and to practice – the rules of safe and responsible riding.

A. The Basics

1. **Always** do the Mechanical Safety Check (Section 4.C) before you get on a bike.

2. **Always** wear a cycling helmet which meets the latest Snell, ANSI or other approved standard. (See fig. 10)

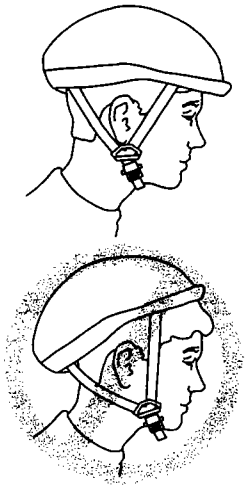


fig. 10 Wearing a Helmet

3. 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.

4. **Always** wear shoes that will stay on your feet and will grip the pedals. **Never** ride barefoot or wearing sandals.

5. Be thoroughly familiar with the controls of your bicycle.

6. Wear bright, visible clothing that is not so loose that it can catch on moving parts of the bicycle or be snagged by objects at the side of the road or trail.

7. Don't jump with your bike. Jumping a bike, particularly a BMX or mountain bike, can be fun; but it puts incredible stress on everything from your spokes to your pedals. Perhaps

most vulnerable to jumping-related damage is your front fork. Riders who insist on jumping their bikes risk serious damage, to their bicycles as well as to themselves.

8. Think about your speed, and keep your speed at a level which is consistent with conditions. Always keep in mind that there is a direct relationship between speed and control, and between speed and component stress

B. Rules of the Road

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

2. You are *sharing* the road or the path with others — motorists, pedestrians and other cyclists. Respect their rights, and be tolerant if they infringe on yours.

3. Ride defensively. *Assume* that the people with whom you are sharing the road are so absorbed with what *they* are doing and where *they* are going that they are oblivious to you.

4. Look ahead of where you're going, and be ready to avoid:

- Vehicles slowing or turning in front of you, entering the road or your lane ahead of you, or coming up behind you.
- Parked car doors opening in front of you.
- Pedestrians stepping out in front of you.
- Children 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.

5. Ride in designated bike lanes, on designated bike paths or on the *right* side of the road, in the *same* direction as car traffic and as close to the edge of the road as possible.

6. Stop at stop signs and traffic lights; slow down and look both ways at street intersections. Remember that a bicycle *always* looses in a collision with a motor vehicle, so be prepared to yield even if you have the right of way.

7. Use hand signals for turning and stopping. Learn the local vehicle code for the correct signals.

8. Never ride with headphones. They mask traffic sounds and emergency vehicle sirens, distract you from concentrating on what's going on around you, and their wires can tangle in the moving parts of the bicycle, causing you to lose control.

9. Never carry a passenger, unless it is a small child wearing an approved helmet and secured in a correctly mounted child carrier or a child-carrying trailer.

10. Never carry anything which obstructs your vision or your complete control of the bicycle, or which could become entangled in the moving parts of the bicycle.

11. Never hitch a ride by holding on to another vehicle.

12. Don't do stunts, wheelies or jumps. They can cause you injury and damage your bike.

13. Don't weave through traffic or make any moves that may surprise people with whom you are sharing the road.

14. Observe and yield the right of way.

15. Never ride your bicycle while under the influence of alcohol or drugs.

16. If possible, avoid riding in bad weather, when visibility is obscured, at dusk or in the dark, or when extremely tired. Each of these conditions increases the risk of accident.

C. Rules of the Trail

1. Be prepared. If something goes wrong while you're riding off-road, the closest help may be miles away. See Section 8 for the equipment you should take with you on an off-road ride.

2. 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.

3. Surface hazards make off-road riding much more difficult and therefore more dangerous than riding on paved roads. Start slowly and build up your skills on easier terrain before tackling the more difficult.

4. Learn and obey the local laws regulating where and how you can ride off-road, and respect private property. Don't ride where you are not welcome or where you are not allowed.

5. You are *sharing* the trail with others -- hikers, equestrians, other cyclists. Respect their rights, and be tolerant if they inconvenience you.

6. Yield right of way to pedestrians and animals. Ride in a way that does not frighten or endanger them, and stay far enough away so that their unexpected moves don't endanger you.

7. You may be riding in sensitive habitat, so stay on the designated trail. Don't contribute to erosion by riding in mud or with unnecessary sliding. Don't disturb wildlife or livestock; and don't disturb the ecosystem by cutting your own trail through vegetation or streams.

8. It is your responsibility to minimize your impact on the environment. Ride accordingly. Leave things as you found them; and always take out *everything* you brought in.

D. Downhill Mountain Biking

To ride downhill at speed or in competition is to voluntarily assume an increased risk of injury or death. When riding downhill, you can reach speeds seen on motorcycles, and therefore face similar hazards and risks. Wear appropriate safety gear, including an approved full face helmet, full finger gloves, and body armor. 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 advisable at the site where you plan to ride. Ultimately, it is your responsibility to have proper equipment and to be familiar with course conditions.

⚠ **WARNING: Downhill mountain biking can lead to serious accidents. Wear appropriate safety gear and be sure your bike is properly maintained. Follow all instructions above. Even with state-of-the-art protective safety gear, you could be seriously injured or killed when doing downhill mountain biking.**

If your bike has suspension, the increased speed you may develop also increases your risk. When braking, the front of a suspended bike dips. You could lose control and fall if your skill is not up to handling this system. Get to know how to handle your suspension system safely before trying any downhill or very fast mountain biking.

E. Wet Weather Riding

⚠ **WARNING: Wet weather impairs traction, braking and visibility, both for the bicyclist and for other vehicles sharing the road. The risk of an accident is dramatically increased in wet conditions.**

Under wet conditions, the stopping power of your brakes (as well as the brakes of other vehicles sharing the road) is dramatically reduced and your tires don't grip nearly as well. This makes it harder to control speed and easier to lose control. To make sure that you can slow down and stop safely in wet conditions, ride more slowly and apply your brakes earlier and more gradually than you would under normal, dry conditions. See also Section 6.C.

F. Night Riding

Riding a bicycle at night is many times more dangerous than riding during the day. Therefore, children should never ride at dawn, at dusk or at night. Adults should not ride at dusk or at night unless it is absolutely necessary.



WARNING: Riding at dawn, at dusk, after dark or at times of poor visibility without a bicycle lighting system which meets local and state laws and without reflectors is illegal, dangerous and can result in serious injury or death.

Even if you have excellent night vision, many of the people with whom you're sharing the road don't. A bicyclist is very difficult for motorists and pedestrians to see at dawn, at dusk, at night, or at other times of poor visibility. If you must ride under these conditions, check and be sure you comply with all local laws about night riding; follow the Rules of the Road and of the Trail even more carefully, and you must take the following additional precautions:

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

- Make sure that your bicycle is equipped with correctly positioned and securely mounted reflectors (see Section 4 B).
- Purchase and install an adequate battery or generator powered head and tail light.
- Wear light colored, reflective clothing and accessories, such as a reflective vest, reflective arm and leg bands, reflective stripes on your helmet, flashing lights ... 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.

While riding at dawn, at dusk or at night:

- Ride slowly.
- Avoid areas of heavy traffic, dark areas, and roads with speed limits over 35 mph.
- Avoid road hazards.
- If possible, ride on routes already familiar to you.

6. How Things Work

It's important to your performance, enjoyment and safety to understand how things work on your bicycle. Even if you're an experienced bicyclist, don't assume that the way things work on your new bike is the same as how they work on older bikes. Be sure to read — and to understand — this section of the Manual. If you have even the slightest doubt as to whether you understand something, talk to your dealer .

A. Wheel Quick Release

WARNING: Riding with an improperly adjusted wheel quick release can allow the wheel to wobble or disengage from the bicycle, causing damage to the bicycle, and serious injury or death to the rider.

Therefore, it is essential that you:

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

Invented in the 1930s to allow quick, easy wheel removal without the need for tools, the bicycle wheel quick release has become standard equipment on most recreational, sports and competition bicycles. While it looks like a long bolt with a lever on one end and a nut on the other, the wheel quick release uses a cam action to clamp the bike's wheel in place (see fig. 11). Because of its adjustable nature, it is critical that you understand how it works and how to use it properly.

CAUTION: 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 the wheel safely in the dropouts.

1. Adjusting the quick release mechanism

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

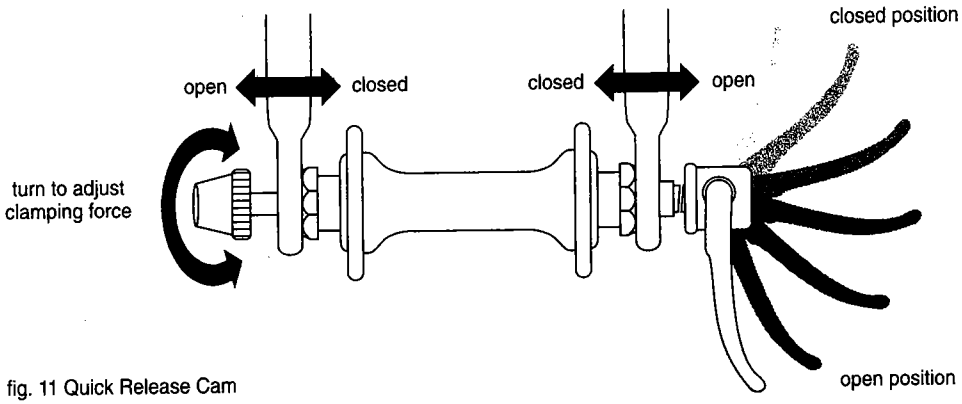


fig. 11 Quick Release Cam

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

2. Front Wheel Secondary Retention Devices

Many bicycles have front forks which utilizes a secondary wheel retention device to keep the wheel from disengaging if the quick release is incorrectly adjusted. **Secondary retention devices are not a substitute for correct quick release adjustment.**

Secondary retention devices fall into two basic categories:

a) The **clip-on** type is an accessory part which the manufacturer adds to the front wheel hub or front fork.

b) The **integral** type is molded, cast or machined into the outer faces of the front fork dropouts.

Ask your dealer to explain the particular secondary retention device on *your* bike.

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

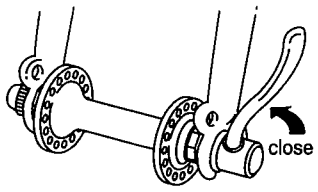


fig. 12 QR Closed Position

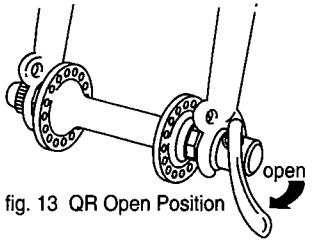


fig. 13 QR Open Position

3. Removing or Installing Quick Release Wheels

a. Removing a Quick Release Front Wheel

(1) Open up the brake shoes (see Section 6.C.1, figs. 16a, b, c and d).

(2) Rotate the wheel's quick-release lever from the locked or CLOSED position to the OPEN position (figs. 11, 12 & 13).

(3) If your front fork *does not* have a secondary retention device go to step 5.

(4) If your front fork has a *clip-on* type secondary retention device, disengage it and go to step

(5). If your front fork has an *integral* secondary retention device, loosen the tension adjusting enough to allow removing the wheel; then go to step (5).

(5) Raise the front wheel a few inches off the ground and tap the top of the wheel with the palm of your hand to knock the wheel out of the front fork.

b. Installing a Quick Release Front Wheel

(1) Rotate the quick-release lever so that it curves away from the wheel (fig. 11 & 13). This is the OPEN position.

(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 slots which are at the tips of the fork blades — the fork drop-outs. The quick-release lever should be on the *left* side of the bicycle (fig. 12 & 13). If your bike has a clip-on type secondary retention device, engage it.

(3) Holding the quick-release lever in the OPEN position with your right hand, tighten the tension adjusting nut with your left hand until it is finger tight against the fork dropout (fig. 11).

(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, rotate the quick-release lever upwards and push it into the CLOSED position (fig. 11 & 12). The lever should be parallel to the fork blade and curved toward the wheel.

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

(5) If the lever cannot be pushed all the way to a position parallel to the fork blade, return the

lever to the OPEN position. Then turn the tension adjusting nut counterclockwise one-quarter turn and try tightening the lever again.

(6) Close the brake shoes; then spin the wheel to make sure that it is centered in the frame and clears the brake shoes.

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

c. Removing a Quick Release Rear Wheel

(1) Shift the rear derailleur to high gear (the smallest, outermost rear sprocket).

(2) Open up the brake shoes (see Section 6.C.1, figs. 16A, B, C and D).

(3) Pull the derailleur body back with your right hand.

(4) Rotate the quick-release lever to the OPEN position (fig. 11 & 13).

(5) Lift the rear wheel off the ground a few inches and, with the derailleur still pulled back, push the wheel forward and down until it comes out of the rear dropouts.

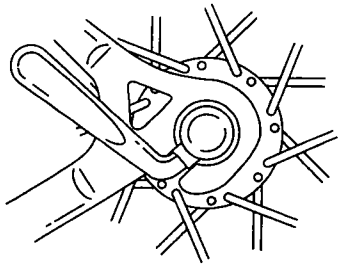


fig. 14 Wheel in Rear Dropouts

d. Installing a Quick Release Rear Wheel

1) Shift the rear derailleur to its outermost position

2) Pull the derailleur body back with your right hand.

(3) Rotate the quick-release lever to the OPEN position (see fig. 11). The lever should be on the side of the wheel opposite the derailleur and freewheel sprockets.

(4) Put the chain on top of the smallest free wheel sprocket. Then, insert the wheel into the frame dropouts and pull it all the way in to the dropouts (fig. 14).

(5) Tighten the adjusting nut until it is finger tight against the frame dropout; then rotate the lever toward the front of the bike until it is parallel to the frame's chainstay or seatstay and is curved toward the wheel (fig. 14).

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

(6) If the lever cannot be pushed all the way to a position parallel to the chainstay or seatstay tube, return the lever to the OPEN position. Then turn the adjusting nut counterclockwise one-quarter turn and try tightening again.

(7) Push the rear derailleur back into position.

(8) Close the brake shoes; then spin the wheel to make sure that it is centered in the frame and clears the brake shoes.

4. Removing and Installing Bolt-On Wheels

a. Removing a Bolt-On Front Wheel

(1) Open up the brake shoes (see Section 6.C.1, figs. 16A, B, C and D).

(2) With a 15mm box wrench or a six inch adjustable wrench, loosen the two axle nuts.

(3) If your front fork has a *clip-on* type secondary retention device, disengage it and go to step (4). If your front fork has an *integral* secondary retention device, loosen the axle nuts about six full turns; then go to step (4).

(4) Raise the front wheel a few inches off the ground and tap the top of the wheel with the palm of your hand to knock the wheel out of the fork ends.

b. Installing a Bolt-On Front Wheel

(1) With the steering fork facing forward, insert the wheel between the fork blades so that the axle seats firmly at the top of the slots which are at the tips of the fork blades. The axle nut washers should be on the outside, between the fork blade and the axle nut. If your bike has a clip-on type secondary retention device, engage it.

(2) 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, use a six-inch adjustable wrench or a 15mm box wrench to tighten the axle nuts as tight as you can.

(3) Close the brake shoes; then spin the wheel to make sure that it is centered in the frame and clears the brake shoes.

c. Removing a Bolt-On Rear Wheel

(1) Open the rear brake shoes (see Section 6.C.1, figs. 16A, B, C and D).

(2) Shift the rear derailleur to high gear (the smallest rear sprocket) and pull the derailleur body back with your right hand

(3) With a 15mm box wrench or a six-inch adjustable wrench, loosen the two axle nuts.

(4) Lift the rear wheel off the ground a few inches and, with the derailleur still pulled back, push the wheel forward and down until it comes out of the rear dropouts.

d. Installing a Bolt-On Rear Wheel

(1) Shift the rear derailleur to its outermost position and pull the derailleur body back with your right hand.

(2) Put the chain on to the smallest sprocket. Then, insert the wheel into the frame dropouts and pull it all the way in to the dropouts. The axle nut washers should be on the outside, between the frame and the axle nut.

(3) Tighten the axle nuts as tightly as you can, using a six-inch adjustable wrench or a 15mm box wrench.

(4) Push the rear derailleur back into position.

(5) Close the brake; then spin the wheel to make sure that it is centered in the frame and clears the brake shoes.

B. Seatpost Quick Release

Many mountain bikes are equipped with quick-release seat post binders. The seatpost quick-release binder works

exactly like the wheel quick-release (Section 6.A.1) While a quick release looks like a long bolt with a lever on one end and a nut on the other, the quick release uses a cam action to firmly clamp the seat post (see Figs. 7B and 11).



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 your dealer to help you make sure you know how to correctly clamp your seat post.
2. Understand and apply the correct tech nique for clamping your seat post quick release.
3. Before you ride the bike, first check that the seatpost is securely clamped.

Adjusting the quick release mechanism

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



CAUTION: The full force of the cam action is needed to clamp the seatpost 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 seatpost safely.



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

C. Brakes

NOTE: For most effective braking, use both brakes and apply them simultaneously. WARNING: Sudden or excessive application of the front brake may pitch the rider over the handlebars, causing serious injury or death.

1. How brakes work

It's important to your safety that you instinctively know which brake lever controls which brake on your bike. In the U.S., bikes are required to be set up with the *right* brake lever controlling the *rear* brake, and the *left* lever controlling the *front* brake.

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

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

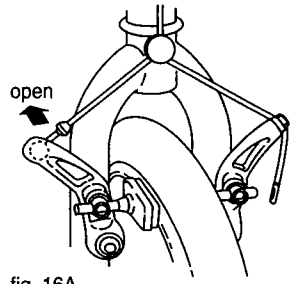


fig. 16A

Most brakes have some form of quick release mechanism to allow the brake shoes 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 Fig. 16A, B, C & D) and check each time to make sure both brakes work correctly before you get on the bike.

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.

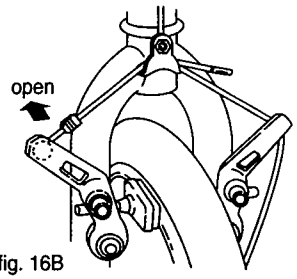


fig. 16B

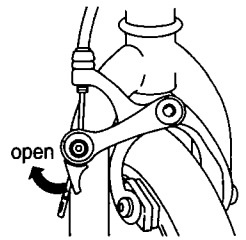


fig. 16C

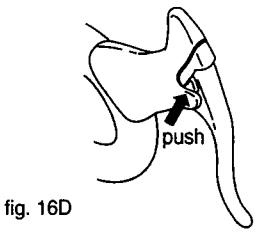
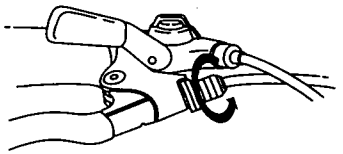
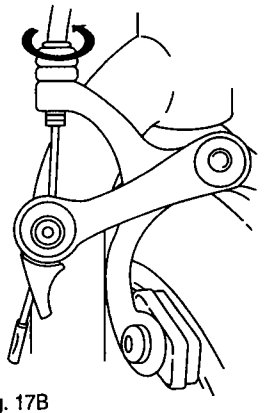


fig. 16D

⚠ WARNING: Some bicycle brakes, such as linear-pull (fig 16B) and disc brakes, are extremely powerful. You should take extra care in becoming familiar with these brakes and exercise particular care when using them. Applying these brakes too hard or too suddenly can lock up a wheel, which could cause you to lose control and fall.

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,


fig. 17A
Brake Lever Adjusting Barrel


fig. 17B
Caliper Brake Adjusting Barrel

as you apply brakes and your weight shifts 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 steep descents, because descents shift weight forward.

The keys to effective speed control and safe stopping are controlling wheel lockup and 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 shoes reduces their ability to grip. **The way to maintain control on loose or wet surfaces is to go more slowly to begin with.**

2. Adjusting your brakes

If either brake lever on your bike fails the Mechanical Safety Check (Section 4.C) you can restore brake lever travel by turning the brake cable adjusting barrel (figs. 17A &B) *counterclockwise*, then lock the adjustment in by turning the barrel's lock nut *clockwise* as far as it will go. If the lever still fails the Mechanical Safety Check, have your dealer check the brakes.

D. Shifting

Your multi-speed bicycle will have a derailleur drivetrain (see 2. below), an internal gear hub drivetrain (see 3. below) or, in some special cases, a combination of the two.

1. Why all those gears?

You will get the greatest fitness benefit, produce the greatest sustained power and have the greatest endurance if you learn to spin the pedals at high revolutions per minute (called *cadence*) against low resistance. You will get the least fitness benefit and have the least endurance by pushing hard on the pedals against heavy resistance. The purpose of having multiple gears on a bicycle is to let you chose the

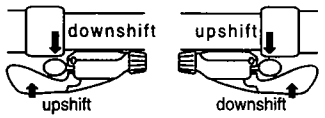


fig. 18A

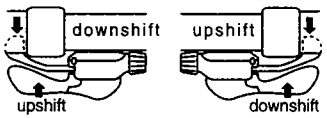


fig. 18B

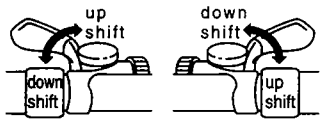


fig. 18C

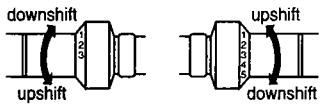


fig. 18D

gear that allows you to maintain your optimum cadence under the widest range of riding conditions. Depending on your fitness level and experience (the more fit, the higher the cadence), optimum cadence is between 60 and 90 pedal revolutions per minute.

2. Shifting a derailleur drivetrain

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

- a rear sprocket cluster, called a reewheel or freewheel cassette
- a rear derailleur
- usually a front derailleur
- one or two shifters
- one or two control cables
- one, two or three front sprockets called chainrings
- a drive chain

The number of possible gear combinations ("speeds") is the product of multiplying the number of sprockets at the rear of the drivetrain by the number of sprockets at the front (6 x 2 = 12, 6 x 3 = 18, 7 x 3 = 21 and so on).

a. Shifting Gears

There are many different types of shifter mechanisms, each preferred for specific types of application because of its ergonomic, performance and price characteristics. The designers of your bike have selected the shifter design which they believe will give the best results on your bike. The different types of shifters and their operation are illustrated in figures 18A through 18H. Identify the shifters on your bike before reading on.

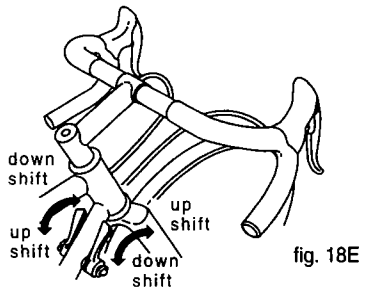


fig. 18E

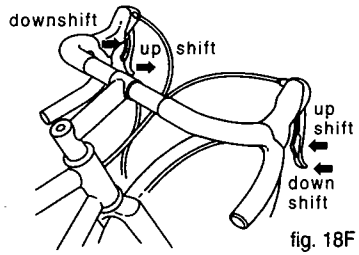


fig. 18F

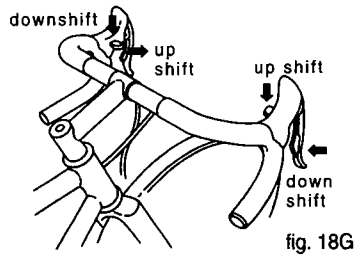


fig. 18G

The vocabulary of shifting can be pretty confusing. A *downshift* is a shift to a "slower" gear, one which is easier to pedal. An *upshift* is a shift to a "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 details, read the instructions on **Shifting the Rear Derailleur** and **Shifting the Front Derailleur** below). 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.

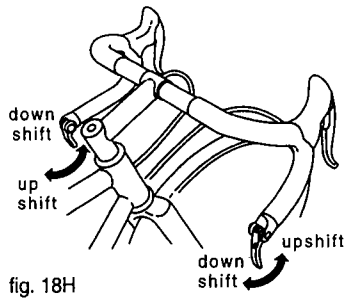


fig. 18H

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,

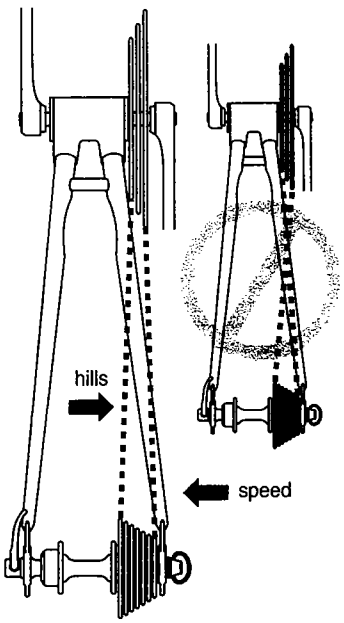


fig. 19 Chain

nor pedal backwards after having moved the shifter. This could jam the chain and cause serious damage to the bicycle.

⚠ WARNING: Never shift a misadjusted derailleur onto the largest or the smallest sprocket. The chain could jam, causing you to lose control and fall.

1) 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 to another on the rear gear cluster, thereby changing gear drive ratios. 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 disengage the chain from one sprocket and move it on to another, the chain must be moving forward (i.e. the rider must be pedaling forward).

2) 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*).

b) Which gear should I be in?

The combination of *largest rear, smallest front* gears (Fig. 19) is for the steepest hills. The *smallest rear, largest front* combination (Fig. 19) 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. Once you've learned the basics, experience will teach you which gear is appropriate for which condition, and practice will help you shift smoothly and at precisely the optimum moment.

3. Shifting an internal gear hub drivetrain

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

- a 3, 5, 7 or possibly 12 speed internal gear hub
- one, or sometimes two shifters
- one or two control cables
- one front sprockets called chainrings
- 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 (3, 5, 7 or 12, depending on the number of speeds of your hub) 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. Once you've learned the basics, experience will teach you which gear is appropriate for which condition, and practice will help you shift smoothly and at precisely the optimum moment.

E. Toeclips & Straps

Toeclips and straps are the traditional means which experienced cyclists use to keep their 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.



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 the rider's attention, causing 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.

F. Clipless ("step-in") pedals

Clipless pedals (sometimes called "step-in pedals") are the means most racers use to keep their feet securely in the correct position for maximum pedaling efficiency. They work like ski bindings ... a plate on the sole of the shoe clicks into a spring-loaded fixture on the pedal. Clipless pedals require shoes specifically designed for 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. Your dealer can show you how to make this adjustment.

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. 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 the rider's attention, causing the rider 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 that you follow the setup and service instructions and warnings which came with your pedals.

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. Your bicycle has been equipped with tires which the bike's manufacturer felt were the best balance of performance and value for the use for which the bike was intended. 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. 20). The part of this information which is most important to you is **Tire Pressure.**

WARNING: Never inflate a tire beyond the maximum pressure marked on the tire's sidewall. Exceeding the recommended maximum pressure may blow the tire off the rim, which could cause damage to the bike and injury to the rider and bystanders.

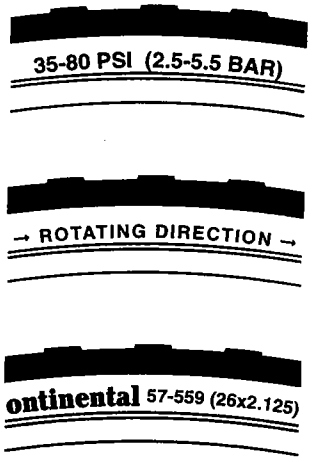


fig. 20 Tire Markings

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

CAUTION: Gas station air hoses move a large volume of air very rapidly, and will raise the pressure in your tire very rapidly. To avoid overinflation when using a gas station air hose, put air into your tire in short, spaced bursts.

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 and gas station air hose pressure settings can be inaccurate and should not be relied upon for consistent, accurate pressure readings. Instead, use a high quality dial gauge.

Ask your dealer to recommend the best tire pressure for the kind of riding you will most often do, and have the dealer inflate your tires to that pressure. Then, check inflation as described in Section 4.C so you'll know how correctly inflated tires should look and feel. Some tires may need to be brought up to pressure every week or two.

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.

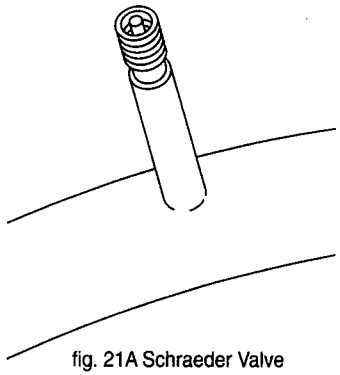


fig. 21A Schraeder Valve

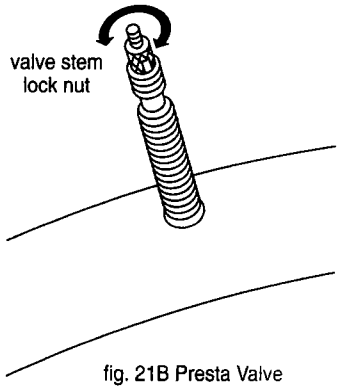


fig. 21B Presta Valve

2. Tire Valves

The tire valve allows air to enter the tire's inner tube under pressure, but doesn't let it back out unless you want it to.

There are primarily two kinds of bicycle tube valves (actually, there are other designs, but they are seldom seen in the US any more): The **Schraeder** Valve and the **Presta** Valve. The bicycle pump you use must have the fitting appropriate to the valve stems on your bicycle.

The **Schraeder** (Fig. 21a) is like the valve on a car tire. To inflate a Schraeder valve tube, remove the valve cap and push the air hose or pump fitting onto the end of the valve stem. To let air out of a Schraeder valve, depress the pin in the end of the valve stem with the end of a key or other appropriate object.

The **Presta** valve (Fig. 21b) has a narrower diameter and is only found on bicycle tires. To inflate a Presta valve tube using a Presta headed bicycle pump, remove the valve cap; unscrew (counterclockwise) the valve stem lock nut; and

push down on the valve stem to free it up. Then push the pump head on to the valve head, and inflate. To inflate a Presta valve with a gas station air hose, you'll need a Presta adapter (available at your bike shop) which screws on to the valve stem once you've freed up the valve. The adapter fits the end of the air hose 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.

H. Bicycle Suspension

Some Mountain Bikes come equipped with suspension systems which are designed to smooth out some of the shocks encountered in off-road riding. 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, ask your dealer to provide you with the appropriate adjustment and maintenance 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.



CAUTION: 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 recommend-ations, 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.



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

WARNING: If your bike has suspension, the increased speed you may develop also increases your risk. When braking, the front of a suspended bike dips. You could lose control and fall if your skill is not up to handling this system. Get to know how to handle your suspension system safely before trying any downhill or very fast mountain biking.

Suspension can increase the handling capabilities and comfort of your bicycle. 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 are sure you are competent to handle the full capabilities of your bike.

7. Service and Maintenance

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

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

How much of your bike's service and maintenance you can do yourself depends on your level of skill and experience, and on whether you have the special tools required.

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

If you want to learn to do major service and repair work on your bike, you have three options:

1. Ask your dealer whether copies of the manufacturer's installation and service instructions for the components on your bike are available.

2. Ask your dealer to recommend a book on bicycle repair.

3. Ask your dealer about the availability of bicycle repair courses in your area.

Regardless of which option you select, we recommend that you ask your dealer to check the quality of your work the first time you work on something and **before** you ride the bike, just to make sure that you did everything correctly. Since that will require the time of a mechanic, there may be a modest charge for this service.

A. Service & Maintenance Schedule

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

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

1. Break-in Period: Your bike will last longer and work better if you break it in before riding it hard. Control cables and wheel spokes may stretch or "seat" when a new bike is first used and may require readjustment by your dealer. Your Mechanical Safety Check (Section 4.C) will help you identify some things that need readjustment. But even if everything seems fine to you, it's best to take your bike back to the dealer for a checkup. Dealers typically suggest you bring the bike in for a 30 day checkup. Another way to judge when it's time for the first checkup is to bring the bike in after three to five hours of *hard off-road use*, or about 10 to 15 hours of *on-road or more casual off-road use*. But if you think something is wrong with the bike, take it to your dealer before riding it again.

2. Before every ride: Mechanical Safety Check (see Section 4.C)

3. After every long or hard ride; if the bike has been exposed to water or grit; or at least every 100 miles: Clean the bike and lightly oil the chain, freewheel cogs and rear derailleur pulley bushings. Wipe off excess oil. Lubrication is a function of climate. Talk to your dealer about the best lubricants and the recommended lubrication frequency for your area.

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

- Squeeze the front brake and rock the bike forward and back. Everything feel solid? If you feel a clunk with each forward or backward movement of the bike, you probably have a loose headset. Have your dealer check it.

- Lift the front wheel off the ground and swing it from side to side. Feel smooth? If you feel any binding or roughness in the steering, you may have a tight headset. Have your dealer check it.

- Grab one pedal and rock it toward and away from the centerline of the bike; then do the same with the other pedal. Anything feel loose? If so, have your dealer check it.

- Take a look at the brake shoes. Starting to look worn or not hitting the wheel rim squarely? Time to have the dealer adjust or replace them.

- Carefully check the control cables and cable housings. Any rust? Kinks? Fraying? If so, have your dealer replace them.

- Squeeze each adjoining pair of spokes on either side of each wheel between your thumb and index finger. Do they all feel about the same? If any feel loose, have your dealer check the wheel for tension and trueness.

- Check the frame, particularly in the area around all tube joints; the handlebars; the stem; and the seatpost for any deep scratches, cracks or discoloration. These are signs of stress-caused fatigue and indicate that a part is at the end of its useful life and needs to be replaced.

- Check to make sure that all parts and accessories are still secure, and tighten any which are not.

⚠ **WARNING: Like any mechanical device, a bicycle and its components are subject to wear and stress. Different materials and mechanisms wear or fatigue from stress at different rates and have different life cycles. If a component's life cycle is exceeded, the component can suddenly and catastrophically fail, causing serious injury or death to the rider. Scratches, cracks, fraying and discoloration are signs of stress-caused fatigue and indicate that a part is at the end of its useful life and needs to be replaced.**

5. As required:

If either brake lever fails the Mechanical Safety Check (Section 4.C): restore brake lever travel by turning the brake cable adjusting barrel *counterclockwise*, then lock the adjustment in by turning the barrel's lock nut *clockwise* as far as it will go. If the lever still fails the Mechanical Safety Check, have your dealer check the brakes.

If the chain won't shift smoothly and quietly from gear to gear: the derailleur is out of adjustment. The cause may be as simple as cable stretch, in which case you can compensate by turning the shifter or derailleur cable adjusting barrel *counterclockwise* 1/2 turn. Try shifting again. If 1/2 turn to a full turn of the cable adjusting barrel does not cure the problem, see your dealer.

6. Every 25 (hard off-road) to 50 (on-road) hours of riding:

Take your bike to your dealer for a complete checkup.

8. Getting home when something breaks

Unless you're going for a short ride in the neighborhood, or you can walk home or call someone to pick you up if something breaks, you should never go for a bike ride without the following emergency equipment:

- 4mm, 5mm and 6mm Allen wrenches, used to tighten various clamping bolts that may loosen
- Patch kit and a spare inner tube
- Tire levers
- Tire pump or cartridge inflator with correct head to fit your tire valves (see Section 6.G.2)
- Some kind of identification (so people know who you are in case of accident)
- A couple of dollars in cash (for a candy bar, cool drink or emergency phone call)

1. If you get a flat tire:

Depress the tire valve to let all the air out of the tube (see Section 6.G.2). Remove the wheel from the bicycle (see Section 6.A.3 or 4). Remove one bead of the tire from the rim by grasping it at a point opposite the valve stem with both hands and, at the same time, lifting and peeling one side of the tire off the rim. If the bead is on too tight for you to unseat it with your hands, use tire levers to lift the bead *carefully* over the tire rim. Remove the valve lock nut (if the valve has one) and push the valve stem through the wheel rim. Remove the inner tube.

Carefully check the outside *and* inside of the tire for the cause of the puncture and remove the cause if it is still there. If the tire is cut, line the inside of the tire in the area of the cut with something handy -- tape, a spare patch, a piece of inner tube, a dollar bill -- whatever will keep the cut from pinching the inner tube.

Either patch the tube (follow the instructions in your patch kit), or use a new one.

WARNING: Patching a tube is an emergency repair. Careless patching or applying several patches can seriously weaken the tube, resulting in possible tube failure, which could cause you to loose control and fall. Replace a patched tube as soon as possible.

Reinstall the tire and tube. Slip one tire bead over the rim. Insert the tube valve through its hole in the rim, but don't secure it with the locknut yet. Feed the tube carefully into the cavity of the tire. Inflate the tube just enough to give it some shape. Starting at the valve stem and working around both sides of the rim to the side opposite the valve stem, use your thumbs to push and seat the other bead of the tire inside the rim. Be careful not to pinch the tube between the tire bead and the wheel rim. If you have trouble getting the last few inches of bead over the edge of the rim with thumb pressure, use a tire lever and be careful not to pinch the tube.

CAUTION: If you use a screwdriver or any tool other than a tire lever, you are likely to puncture the tube.

Check to make sure the tire is evenly seated around both sides of the rim and that the tube is inside the tire beads. Push the valve stem into the tire to make sure that its base is seated within the tire's beads. Inflate the tube slowly to the recommended pressure (see Section 6.G), all the while checking to make sure that the tire beads stay seated in the rim. Screw down the valve stem locknut finger-tight. Secure the valve locknut (Presta valve). Replace the valve cap. Replace the wheel in the bike (see Section 6.A.3 or 4).

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

2. If you break a spoke:

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

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

Twist the broken spoke around the spoke next to it to keep it from flopping around and getting caught between the wheel and the frame. Spin the wheel to see if the rim clears the brake shoes. If the wheel will not turn because it is rubbing against a brake shoe, try turning the brake cable adjusting barrel(s) clockwise to slacken the cable and open up the brakes (see Section 6.C.2). If the wheel still won't turn, open the brake's quick release (see figs. 16A through 16D) and secure any loose cable as best you can. Walk the bike, or if you must, ride it **with extreme caution**, because you now have only one working brake.

3. If your bicycle sustains an impact:

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

First, check yourself for injuries, and take care of them as best you can. Seek medical help if necessary.

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

Then, when you get home, carefully perform the checks described in Section 7.A.4 and check for any other damaged parts. All bent, scored or discolored parts are suspect and should be replaced.

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

9. Upgrading Your Bike and Your Equipment

The variety of components and accessories available to enhance the comfort, performance and appearance of your bicycle is almost endless. Your dealer can help you select those that will work best for the kind of riding you do.

Even if you are an experienced rider, don_t assume you can properly install and operate these components or accessories without first reading any instructions that are enclosed with the product. Be sure to read, and understand, the instructions that accompany the products you purchase for your bicycle. If you have the slightest doubt as to their suitability or about your ability to install them correctly, ask your dealer for help.



WARNING: Failure to install and operate any component or accessory properly can result in serious damage to the bicycle, and serious injury or death to the rider.

A. Comfort and Convenience Accessories

Once the bike fit (frame size, saddle position and angle, stem length and rise) is correct, **the saddle** becomes the single most important comfort accessory.

The comfort of a bicycle saddle depends much more on how the saddle shape relates to the rider's body than on the thickness or material of the padding. Bicycle manufacturers select a saddle shape based on their best guess of what's likely to be comfortable for most buyers of that particular bicycle model. But that doesn't mean it's going to be the most comfortable shape for you. That's why your dealer stocks saddles which offer a variety of shapes, padding, covering materials and prices. If the saddle on your new bike is uncomfortable, ask your dealer to suggest an alternative.

If you're planning to spend an hour or more at a time on your bike, get a pair of **cycling gloves**. Their padded palms help keep your hands from getting numb from the vibration of the handlebars (the numbness, called *carpal tunnel*

syndrome, can become quite painful if not taken care of), and they'll provide some abrasion protection for your hands if you fall.

Cycling shorts and **cycling jerseys** are both performance *and* comfort accessories. There are two kinds of cycling shorts: the traditional skin-tight Lycra shorts and loose-fit cycling shorts. Both are designed to reduce friction and chafing. The washable pad in the crotch of the shorts both cushions and protects against chafing. Wear them without underwear to avoid the undergarment's bunching up and chafing. Also available are undergarments designed to reduce chafing when worn with regular street clothes. The jerseys have pockets in the back, so that the things you carry don't bang around when you ride. Many are made of special materials with properties that improve riding comfort and performance.

It's important to drink plenty of liquids before and during exercise. A **water bottle** is an essential companion on a longer ride.

Some basic tools are also useful. The minimum tool kit you will need to make adjustments, perform maintenance and handle emergency repairs should include:

- a set of Allen wrenches in 2mm, 4mm, 5mm and 6mm sizes
- a set of tire levers
- a 6 inch adjustable wrench
- a No. 1 Phillips screwdriver *and* a 1/4 inch flat blade screwdriver
- a tire pump
- a tire patching kit *and* a spare tire tube

2. Performance Upgrades



CAUTION: Changing the components on your bike may void the warranty. To avoid voiding your warranty, check with your dealer before changing the components on your bike.

The most popular way to improve the performance of a bicycle is to substitute **higher priced drivetrain or brake components**. Before attempting to upgrade your drivetrain or brakes, make sure that the components you plan to install are fully compatible with the rest of the components on your bike. Your dealer can help you determine component compatibility and resolve compatibility conflicts.

Another popular way to improve the performance of a bicycle is to substitute **lighter weight "racing" components**. Lighter wheels, tires, handlebars and so on can enhance the performance of your bike; but you must always keep in mind that light weight racing components are not intended to have the life expectancy of their heavier counterparts, and you must therefore exercise extra care in checking for signs of stress fatigue (See Section 7.4)

Suspension forks are also a popular component upgrade. Before installing a suspension fork on a non-suspension bike or installing a fork with different travel or geometry characteristics than the original fork on the bicycle, you must make sure that the frame is designed to take the change in geometry and the changes in stress characteristics which the change in fork can cause. Ask your dealer to check with the bike_s manufacturer ... or check with the manufacturer_s technical support staff yourself ... before installing a different fork on your bicycle.



WARNING: Suspension forks, particularly the "double clamp" and "triple clamp" designs favored by downhill racers, put extraordinary stresses on the head tube and front part of the bicycle frame which the frame's design may not be able to handle. Such stresses can result in sudden, catastrophic frame failure, which can cause serious injury or death.

Disc brakes are becoming a more common mountain bike performance upgrade. Most front suspension forks are designed to accept a disc brake, and can take the added stresses at the brake mounting points. Be sure that the fork you are using is designed to accept disc brake stresses. Most bicycle frames, however, were not designed for the stresses which a rear disc brake can put on the seatstay or chainstay. Before attempting to install a rear disc brake, ask your dealer to check with the bike's manufacturer ... or check with the manufacturer's technical support staff yourself ... to make sure that the frame can absorb the localized stresses at the disc brake's mounting points.



WARNING: Rear disc brakes put extraordinary stresses on the seatstay or chainstay, which the frame's design may not be able to handle. Such stresses can result in sudden, catastrophic frame failure, which can cause serious injury or death.

Your dealer has many other comfort and performance accessories that can increase your cycling enjoyment.

INTRODUCTION

Congratulations and thank you for purchasing a K2 Bike. This bicycle is designed to provide many years of performance and enjoyment. The following information is provided as an addendum to your 2000 K2 Bike Owner's Manual and is designed to be used in conjunction with the K2 Bike Manual.

This addendum provides information for the following 2000 K2 Bike models:

- **Razorback RSL, Razorback RS, Razorback RSX**
- **EVO 4.0, EVO 3.0, Disco Monkey, EVO 2.0**
- **Attack 3.0, Attack 2.0**

GENERAL INFORMATION

In this section:

- **Read this Manual!**
- **Precautions**

Please refer to your K2 Bike Owner's Manual for complete instructions on using and servicing your new K2 Bike.

NOTE: K2 Bike strongly recommends that you read and understand completely the information contained in the K2 Bike Owner's Manual as well as the information contained in this addendum. Failure to read and understand the information contained in these two manuals can be extremely dangerous, and can result in problems during use and severe injury.

CAUTION: K2 Bike strongly recommends that your bike be serviced by a K2 Bike dealer or other qualified technician. These instructions are for a qualified installer who possesses proper training and tools. Improperly assembled bikes can be extremely dangerous, and can result in failure during use and severe injury.

RAZORBACK RS SUSPENSION TUNING

In this section:

- **Air Pressure Tuning**
- **Spring Chart**
- **Suspension Sag**
- **Rebound Damping**

This section provides guidelines for tuning your K2 Bike rear suspension.. Please refer to your **Front Suspension Fork Owner's Manual** for complete suspension fork tuning information.

For a complete discussion about the **Tuning Variables and Tuning Adjustments** involved in bicycle suspension Please refer to you **K2 Bicycle Owner's Manua**l. This addendum discusses the basic tuning guidelines for the bicycles only.

The Razorback RS comes equipped with the new **Noleen Mega Air Pull Shock**. This shock provides 1.5in / 38mm of shock stroke resulting in 2.7in / 69mm of travel at the rear wheel. The shock is air sprung and oil damped. The spring rate of the fork is adjusted by changing the internal pressure of the shock. The pressure can be changed by using a high-pressure shock pump, such as the **Noleen Mega Air 300psi Shock Pump**.



Pressurizing the Mega Air Pull Shock

Air Pressure Tuning

Tuning selection is affected greatly by rider preference. More aggressive riders may desire their shocks to be stiffer, while a more recreationally oriented rider may like a softer ride with softer shock setting. Experimentation with a couple different stiffnesses may be necessary to find the correct set up.

Consult the following tables to select the air pressure that's best for you. Remember, these are recommendations. You may wish to try a stiffer or softer setting than recommended due to the terrain you ride, your riding style, and personal preference. Air pressure in the Mega Air rear shock is determined by subtracting a certain amount from your body weight. Please refer to the chart below for the correct shock pressure.

Spring Chart - Razorback RS (all models)

Frame Size	Pressure (PSI)
Small	Body weight in lbs. minus 25-30 lbs
Medium	Body weight in lbs. minus 25-30 lbs
Large	Body weight in lbs. minus 35-40 lbs
Way-Big	Body weight in lbs. minus 35-40 lbs

For example: A 185lb rider on a large frame should pressurize the Mega Air rear shock to 145 - 150 psi.

Suspension Sag setting

Suspension sag is the amount your suspension compresses under your body weight. To increase or decrease the amount of suspension sag, increase or decrease the amount of pressure in the shock. Please refer to the **K2 Bike Owner's Manual** for a more in depth discussion of suspension sag. You should measure sag at the shock by measuring the length of the exposed shock shaft when the shock compresses. The proper amount of suspension sag on a Razorback RS is:

Attack - Proper sag 5mm (at the shock)

Damping Adjustment



Adjusting Rebound Damping

The Noleen Mega Air Pull shock features **externally adjustable rebound damping** and an **externally operated lockout mechanism** that is turned on or off via a handlebar mounted lever. Please refer to your **K2 Bike Owner's Manual** for the complete discussion about rebound and compression damping.

Adjusting Rebound Damping

The rebound adjuster is a round dial on the end of the shock that adjusts the rate at which the shock extends fully. The rebound should be adjusted so that the shock extends quickly after compression to prepare the suspension for the next bump, but not too quickly. The shock should not "top out' or extend to quickly or harshly. Try different settings to find the right setting for your preferences.

We suggest that most riders run the rebound damping settings set to 1 to 5 clicks out from fully closed. The heavier the rider, the more rebound damping needed. Lighter riders will need less.

Using the Remote Lockout Mechanism



Lockout lever in open / unlocked position

Your Mega Air Pull-Shock features a remote lockout mechanism that locks out the rear suspension by dramatically increasing the shock's compression damping with the flip of a handlebar-mounted lever. When the shock is locked out, the rear suspension will not compress under normal seated or standing pedaling, but will compress if the rear wheel encounters a big hit. This "blow off" feature allows the rear suspension to still activate under a very high load, and also adds to the longevity of the shock and shock seals.

The lockout lever is a three position thumb shifter, but only two positions can be used with the shock. Setting your lockout lever up as shown in the illustrations will provide the best performance. The lever should be in the full open position and the lockout switch on the shock should be in the full open position when the cable is installed. The cable should be set so that there is no slack in the line. The lockout switch on the shock must be in the full lockout position in order for the lockout feature to function properly. If the lockout mechanism does not seem to function properly, reset the cable tension. The cable holding screw in the switch should be tightened to 20 in-lbs.



Lockout switch in open / unlocked position



Lockout lever in closed / locked position



Lockout switch in closed / locked position

RAZORBACK RS PIVOT

In this section:

- **Pivot Assembly / Adjustment**
- **Pivot Disassembly**
- **Pivot Maintenance**

Pivot Maintenance

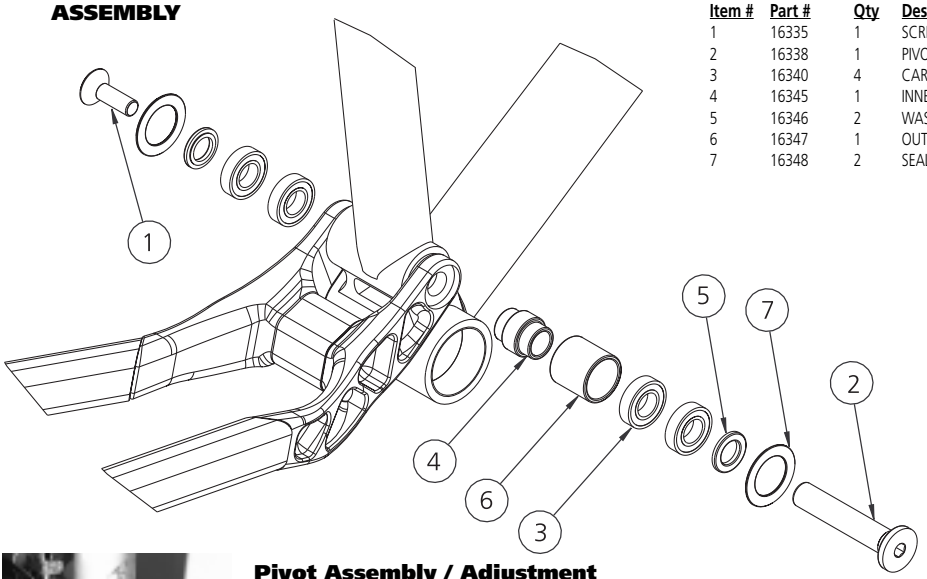
The new pivot on the Razorback RS frame is designed to be very durable and easy to maintain. The pre-lubricated bearings should not need to be regreased. The main service that is needed is to replace the bearings and main pivot axle when they wear. Follow the instructions for **Pivot Disassembly** and **Pivot Assembly** to replace the bearings and washers.

Pivot Disassembly

To disassemble the Razorback RS main pivot:

1. Loosen the main pivot bolt on and press the main pivot axle out of the frame. You may need to use a wooden dowel or a small socket and a soft mallet to help press the axle out.
2. Remove the swingarm from the pivot.
3. Press the bearings out of the frame with a large socket or a similarly sized dowel. Take care not to damage the frame in any way.

RAZORBACK RS MAIN PIVOT ASSEMBLY



Item #	Part #	Qty	Description
1	16335	1	SCREW, M8 X 1.25 X 20 FHCS
2	16338	1	PIVOT AXLE
3	16340	4	CARTRIDGE BEARING, 6901LU
4	16345	1	INNER SPACER, PIVOT BEARING
5	16346	2	WASHER, ALUMINIUM OUTER
6	16347	1	OUTER SPACER, PIVOT BEARING
7	16348	2	SEAL WASHER



Removing pivot axle



Removing swingarm and washers



Pivot parts removed

Pivot Assembly / Adjustment

The cartridge bearing pivot on the Razorback RS frame is designed to be easy to assemble, adjust and maintain. The following steps will show you how to assemble and disassemble the new pivot.

To assemble and adjust the Razorback RS Frame main pivot:

1. Lightly grease the inside of the pivot bore in the frame with K2 Goo or another quality waterproof grease.
2. Press the 4 bearings (#3) and bearing spacers (#4 and #6) into the pivot bore in the order shown. It will be easier to press each bearing into the bore from either side of the frame. The outer bearings should recess slightly on either side of the bore.
3. Apply a liberal amount of grease to the outside of the bearings and pivot bore. Press the seal washers (#7) onto the aluminium washers (#5) and press the two washers into the grease on the pivot. Make sure that the beveled side is facing the bearings. The grease will help hold the washers in place when installing the swingarm.
4. Install the swingarm/chainstay onto the frame, aligning the holes in the swingarm with the main pivot bore.
5. Press the main pivot axle (#2) into the frame and swingarm from the non-drive side of the bike. Install the flathead pivot bolt into the axle and tighten to 120 in-lbs. Tightening the main pivot bolt is the only adjustment that needs to be done to the Razorback RS pivot.

Main Pivot Maintenance Schedule

Required Inspection/Service	Every Ride	Weekly	Monthly	Yearly
Check pivot tightness	✔			
Retighten all bolts	✔			
Clean bicycle frame/components		✔		
Check pivot for smooth movement			✔	
Inspect pivot parts and replace parts as needed				✔

EVO FRAME SUSPENSION TUNING

In this section:

- **Air Pressure Tuning**
- **Spring Chart**
- **Suspension Sag**
- **Rebound Damping**

This section provides guidelines for tuning your K2 Bike rear suspension.. Please refer to your **Front Suspension Fork Owner's Manual** for complete suspension fork tuning information.

For a complete discussion about the **Tuning Variables and Tuning Adjustments** involved in bicycle suspension Please refer to you **K2 Bicycle Owner's Manua**l. This addendum discusses the basic tuning guidelines for the bicycles only.

The EVO frames come equipped with **Noleen NR2 rear shocks**. This shock provides 48.5mm / 1.9in of shock stroke resulting in 4.7in / 120mm of travel at the rear wheel. The shock is coil sprung and oil damped. The spring rate of the shock is adjusted by changing the entire coil spring on the shock.

Spring Rates

Spring rate selection is affected greatly by rider preference. More aggressive riders may desire their shocks to be stiffer, while a more recreationally oriented rider may like a softer ride with softer shock setting. Experimentation with a couple different stiffnesses may be necessary to find the correct set up.

Consult the following table to select the spring rate that's best for you. Remember, these are recommendations. You may wish to try stiffer or softer springs than recommended due to the terrain you ride, your riding style, and personal preference.



Measuring Sag

Spring Chart - EVO (all models)

Rider Weight (lbs)	Rider Weight (kg)	Spring Rate	Spring Type
up to 140	50 - 63.6	450 (Small)	NB2 (2 inch / 52mm stroke)
130 - 170	59 - 77.3	500	NB2
160 - 200	73 - 91	550 (Med)	NB2
190 - 230	86.5 - 104.5	600 (Large)	NB2
over 230	105 +	650 (Way-Big)	NB2



Adjusting Preload

Suspension Sag setting and Preload adjustment

Suspension sag is the amount your suspension compresses under your body weight. To adjust the amount of suspension sag, you can adjust the amount of preload on the spring. Please refer to the **K2 Bike Owner's Manual** for a more in depth discussion of suspension sag. You should measure sag at the shock by measuring the length of the spring with no rider weight and again with a rider on the bike. The difference in these two amounts, or the proper amount of suspension sag on a K2 EVO frame is:

EVO - Proper sag 10mm (at the shock)

NOTE: Do not put more than 5mm of preload on any coil spring. 5mm of preload is approximately 5 full turns of the preload adjuster. More than 5mm of preload can cause the spring to fatigue and result in failure during use and severe injury.



Adjusting Rebound Damping

Damping Adjustment

The Noleen NR2 features **externally adjustable rebound damping**. Please refer to your **K2 Bike Owner's Manual** for the complete discussion about rebound and compression damping.

Adjusting Rebound Damping

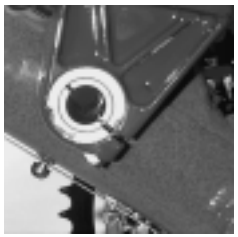
The rebound adjuster is a round dial on one end of the shock that adjusts the rate at which the shock extends fully. The rebound should be adjusted so that the shock extends quickly after compression to prepare the suspension for the next bump, but not too quickly. The shock should not "top out' or extend to quickly or harshly. Try different settings to find the right setting for your preferences.

We suggest that most riders run the rebound damping settings set to 1 to 5 clicks out from fully closed. The heavier the rider, the more rebound damping needed. Lighter riders will need less.

EVO FRAME MAIN PIVOT

In this section:

- **Pivot Adjustment**
- **Pivot Assembly**
- **Pivot Disassembly**
- **Pivot Maintenance**



The EVO Main Pivot



Removing pivot axle



Removing swingarm



Assembling the Pivot

Pivot Adjustment

The only adjustment to the main pivot on the EVO frame is side-play adjustment. This adjustment is simple and is done with the white plastic tool included with the bike. It is not necessary to readjust the main pivot every time that you ride. Adjust the pivot only when you notice some side to side play in the swingarm of the bike.

To adjust the main pivot on the EVO frame:

1. After the pivot is assembled (see **Pivot Assembly**), tighten the drive side swingarm pinch bolt to 120in-lbs.
2. Insert the white endplay adjustment tool into the non-drive side of the pivot. Place the washer onto the provided screw and hand tighten the assembly.
3. Tighten the screw on the tool to **10 in-lbs** to tighten the swingarm, **DO NOT OVERTIGHTEN THE SCREW ON THE ENDPLAY TOOL!**

NOTE: Do not overtighten the endplay adjustment tool when adjusting the main pivot. The plastic tool may break if overtightened and proper pivot adjustment will not occur.

4. After tightening the endplay tool, tighten the non-drive side swingarm pinch bolt to 120 in-lbs. Remove the endplay tool.
5. Check the swingarm for looseness by moving it side to side. If the swingarm is loose, repeat the above procedure.

Pivot Disassembly

To disassemble the EVO Frame main pivot:

1. Loosen the two pivot pinch bolts on the swingarm and press the main pivot axle out of the frame. You may need to use a wooden dowel or a small socket to help press the axle out.
2. Remove the swingarm from the pivot.
3. Remove the pivot inserts from the needle bearings by prying the insert away from the frame. Use care not to damage the frame.
4. Press the needle bearings out of the frame with a 13 or 14mm socket or a similarly sized dowel. Take care not to damage the frame in any way. NOTE: The needle bearings should be replaced after removal. Damage can occur to the bearings when they are removed.

Pivot Assembly

The new Needle-Bearing Main Pivot on the EVO frame is designed to be easy to assemble, adjust and maintain. The following steps will show you how to assemble and disassemble the new pivot.

To assemble the EVO Frame main pivot:

1. Lightly grease the inside of the pivot bore in the frame with K2 Goo or another quality waterproof grease.
2. Press the bearings (#3) and bearing spacer (#4) into the pivot bore in the order shown on the following page. It will be easier to press each bearing in to the bore from either side of the frame. **The bearings will extend out from the frame 1.5mm on either side.**
3. Press the Pivot Inserts (#6) onto the extended bearings. The bearing edge should now sit flush with the Pivot Insert. Make sure that the pivot insert is installed with the beveled edge facing out.
4. Coat the Pivot Inserts with a waterproof grease and install the Thrust Bearings (#5) and the O-rings (#7) into the inserts. The grease will hold the Thrust Bearings and O-rings in place when you assemble the rest of the pivot.
5. Install the axle spacers (#2) into the swingarm.

6. Install the swingarm onto the frame, aligning the holes in the swingarm clamps with the main pivot bore.

7. Press the main pivot axle (#1) into the frame and swingarm until it is flush with the outer edge of the drive side swingarm pivot clamp. Follow the steps in **Pivot Adjustment** to finish main pivot assembly.

Pivot Maintenance

The new pivot on the EVO frame is designed to be very durable and easy to maintain. The pre-lubricated bearings should not need to be regreased. The main service that is needed is to replace the bearings and main pivot axle when they wear.

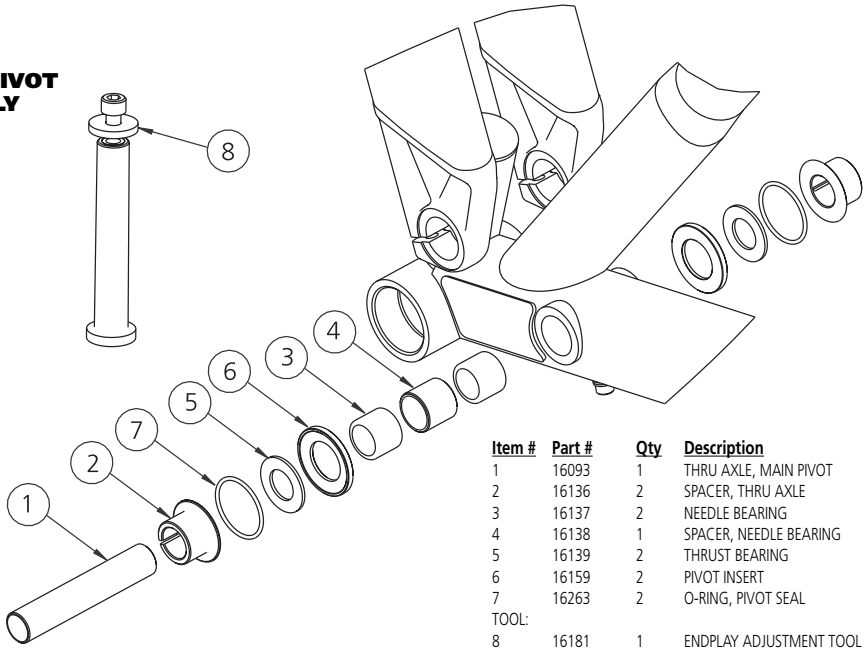
1. Loosen the two pivot pinch bolts on the swingarm and press the main pivot axle out of the frame. You may need to use a wooden dowel or a small socket to help press the axle out.

2. Remove the swingarm from the pivot.

3. Remove the pivot inserts from the needle bearings by prying the insert away from the frame. Use care not to damage the frame.

4. Press the needle bearings out of the frame with a 13 or 14mm socket or a similarly sized dowel. Take care not to damage the frame in any way. NOTE: The needle bearings should be discarded and replaced after removal. Damage can occur to the bearings when removed.

EVO MAIN PIVOT ASSEMBLY



Item #	Part #	Qty	Description
1	16093	1	THRU AXLE, MAIN PIVOT
2	16136	2	SPACER, THRU AXLE
3	16137	2	NEEDLE BEARING
4	16138	1	SPACER, NEEDLE BEARING
5	16139	2	THRUST BEARING
6	16159	2	PIVOT INSERT
7	16263	2	O-RING, PIVOT SEAL
TOOL:			
8	16181	1	ENDPLAY ADJUSTMENT TOOL

Main Pivot Maintenance Schedule

Required Inspection/Service	Every Ride	Weekly	Monthly	Yearly
Check pivot tightness	✔			
Retighten all bolts	✔			
Clean bicycle frame/components		✔		
Check pivot for smooth movement			✔	
Inspect pivot parts and replace parts as needed				✔

ATTACK FRAME SUSPENSION TUNING

In this section:

- **Spring Rate Tuning**
- **Spring Chart**
- **Suspension Sag**
- **Rebound Damping**

This section provides guidelines for tuning your K2 Bike rear suspension.. Please refer to your **Front Suspension Fork Owner's Manual** for complete suspension fork tuning information. For a complete discussion about the Tuning Variable and Tuning Adjustments involved in bicycle suspension Please refer to you **K2 Bicycle Owner's Manua**l. This addendum discusses the basic tuning guidelines for the bicycles only.

The Attack frames come equipped with **Noleen Sport Adjustable** and **Noleen Sport** shocks. This shock provides 38mm / 1.5in of shock stroke resulting in 3.5in / 90mm of travel at the rear wheel. The shock is coil sprung and oil damped. The spring rate of the shock is adjusted by changing the entire coil spring on the shock.

Spring Rates

Consult the following table to select the spring rate that's best for you. Remember, these are recommendations. You may wish to try stiffer or softer springs than recommended due to the terrain you ride, your riding style, and personal preference.

Spring Chart - Attack (all models)

Rider Weight (lbs)	Rider Weight (kg)	Spring Rate	Spring Type
up to 140	50 - 63.6	500 - 550 (Small)	NB2 or NB175
130 - 170	59 - 77.3	600 (Med)	NB2 or NB175
160 - 200	73 - 91	650 (Large)	NB2 or NB175
190 - 230	86.5 - 104.5	700 (Way-Big)	NB2 or NB175
over 230	105 +	750	NB2 or NB175

Suspension Sag setting and Preload adjustment

Suspension sag is the amount your suspension compresses under your body weight. Please refer to the **K2 Bike Owner's Manual** for a more in depth discussion of suspension sag. You should measure sag at the shock by measuring the length of the exposed shock shaft when the shock compresses. The difference in these two amounts, or the proper amount of suspension sag on a K2 Attack frame is:

Attack - Proper sag 8mm (at the shock)

NOTE: Do not put more than 5mm of preload on any coil spring. 5mm of preload is approximately 5 full turns of the preload adjuster. More than 5mm of preload can cause the spring to fatigue and result in failure during use and severe injury.

Damping Adjustment

The **Noleen Sport Adjustable** features **externally adjustable rebound damping**. Please refer to your **K2 Bike Owner's Manual** for the complete discussion about rebound and compression damping. The **Noleen Sport** shock does not have adjustable damping.

Adjusting Rebound Damping

See **EVO Frame Suspension Tuning**

ATTACK FRAME MAIN PIVOT

In this section:

- **Pivot Adjustment**
- **Pivot Assembly**
- **Pivot Disassembly**
- **Pivot Maintenance**

Pivot Maintenance

The new pivot on the Attack frame is designed to be very durable and easy to maintain. The main pivot on the Attack frame is the same as the main pivot on the Razorback RS frame. For Disassembly and Assembly instructions, see **Razorback RS Frame Pivot** section. Also, refer to the main pivot drawing for the Razorback RS to obtain the part numbers for the Attack main pivot parts.

Main Pivot Maintenance Schedule

Required Inspection/Service	Every Ride	Weekly	Monthly	Yearly
Check pivot tightness	✔			
Retighten all bolts	✔			
Clean bicycle frame/components		✔		
Check pivot for smooth movement			✔	
Inspect pivot parts and replace parts as needed				✔

10. About your Dealer

Your dealer is here to help you get the bike and accessories which are most appropriate for the kind of riding that you intend to do; and to help you maintain your equipment so that you can get the maximum enjoyment from it. Your bike shop's staff has the knowledge, tools and experience to give you reliable advice and competent service. Your dealer carries the products of a variety of manufacturers so that you can have the choices which best meet your needs and your budget.

But your dealer's staff can't make decisions for you; nor can they assume responsibility for *your* lack of knowledge, experience, skill or common sense. They can explain to you how something works, or what part or accessory will meet your special needs, but they can't know your questions or your needs unless you tell them.

If you have a problem with your bike or your riding, talk to your dealer. Make sure that the dealer understands your problem or question, and make sure that you really understand the answers.

K2 Bike Limited Warranty

K2 Bike, Inc. warrants each new K2 Bike front triangle (on full suspension bikes) and whole frame (for hardtail bikes) against defects in workmanship and materials for a period of five years from date of purchase. K2 Bike, Inc. likewise warrants Noleen suspension forks, shock absorber units and all other moving parts not permanently fixed to the front triangle of a suspension bike for a period of one year from the date of purchase.

Non-K2 and non-Noleen branded suspension components shall be covered under the stated warranty of their original manufacturers. Parts and components not manufactured by K2 Bike shall be covered under the stated warranty of their original manufacturers. This warranty is expressly limited to the repair or replacement of a defective frame, fork or defective part, and is the sole remedy of the warranty. This warranty applies to the original owner and is not transferable.

Claims under this warranty are to be made through an Authorized K2 Bike/Noleen dealer. Proof of purchase is required. A warranty registration card must be completed and received by K2 Bike Inc. before a warranty claim may be processed.

This warranty does not cover normal wear and tear, improper assembly or follow-up maintenance, or installation of parts or accessories not originally intended or compatible with the bike or fork as sold.

The warranty does not apply to damage or failure due to accident, abuse, or neglect.

K2 Bike, Inc. shall not be responsible for incidental or consequential damages or personal injury. Labor charges for parts changeovers or the individual costs incurred by the dealer are not covered in the warranty. The user assumes the risk of any personal injury or damage to the bicycle or fork or other losses if the bicycle or fork is used at any time for stunt riding or similar activities, power or motor assist of any kind, or anything other than normal use.

This warranty gives the consumer specific legal rights, and those rights may vary from state to state. This warranty does not affect the statutory rights of the consumer.

WARNING: Do not ride or service your bicycle or fork until you have read and thoroughly understood the K2 Bike and/or Noleen Fork Owner's Manual. The manuals contain important safety and care information to help you and your K2 Bike or Noleen fork avoid injury and damage. If you have any questions about the operation or service of your bicycle or fork, you should consult your authorized K2 Bike/Noleen dealer. If you did not receive a copy of the Owner's Manual, contact K2 or visit our website at www.k2bike.com.

K2 Bike, Inc.
19215 Vashon Highway S.W.
Vashon, Washington 98070
www.k2bike.com

IMPORTANT PRODUCT REGISTRATION CARD

Thank you for purchasing this K2 bicycle. Please complete and mail this card immediately to take advantage of special offer.

1. ☐ Married 2. ☐ Single

❶

First Name: _____ Initial: _____ Last Name: _____

Address (Number and Street): _____

City: _____ State: _____ Zip Code: _____

❷ Bike Serial #: _____ *Located on bottom bracket*

❸ Bicycle Model: _____

❹ Date of Purchase: _____ *Month Day Year*

❺ Dealer Name: _____

❻ Purchase Price: $_____.00

❼ What were the top three (3) features influencing your purchase?

1. ☐ Received as a Gift
2. ☐ Value for Price
3. ☐ Color/Appearance
4. ☐ Prior Experience
5. ☐ Quality/Durability
6. ☐ Component Selection
7. ☐ Comfort/Fit
8 ☐ Weight of Bicycle
9. ☐ K2 Reputation
10. ☐ Advertisement
11. ☐ Frame Design/Materials
12. ☐ Recommendation of Friend/Family
13. ☐ Recommendation of Salesperson
14. ☐ Other

❽ What type of riding will you be doing? (Check one)

1. ☐ Road
2. ☐ Trail/Offroad
3. ☐ Mix of Road/Offroad
4. ☐ Racing
5. ☐ Commuting
6. ☐ Touring
7. ☐ Triathlon
8. ☐ Other

❾ How many times do you ride per month?

1. ☐ 1-5
2. ☐ 6-10
3. ☐ 11-15
4. ☐ 15+

❿ Date of YOUR birth: *Month*_____, *Day*_____, *Year*_____

⓫ Gender

1. ☐ Male
2. ☐ Female

⓬ Education (Please check which category applies):

1. ☐ High School
2. ☐ Some College
3. ☐ Completed College
4. ☐ Graduate School

⓭ Which best describes you family income?

1. ☐ Under $15,000
2. ☐ $15,000-$24,999
3. ☐ $25,000-$34,999
4. ☐ $35,000-$49,999
5. ☐ $50,000-$74,999
6. ☐ $75,000-$99,999
7. ☐ $100,000-$149,999
8. ☐ over $150,000

Thank you for filling out this questionnaire. We value your answers and input. Please check here [ ] if you would prefer not to participate in further market research for K2 Bike or obtain information on new and interesting opportunities from other exciting companies.

FREE OFFER!

Register your new K2 bike today, and as our way of saying 'thanks', we'll send you two free issues of MOUNTAIN BIKE or BICYCLING magazine and a free gift. Simply check one of the boxes below!

☐ Yes! Please send me a free 2 issue trial subscription to MOUNTAIN BIKE magazine and a free gift - Mountain Bike's Trail Finder. If I like what I see, I'll pay just $13.97 (plus $2. 97 for delivery) for 9 more issues*.

☐ Yes! Please send me a free 2 issue trial subscription to BICYCLING magazine and a free gift - Bicycling's Mileage Log and Training Guide. If I like what I see, I'll pay just $11.97 (plus $1.97 for delivery) for 9 more issues*.

* If I choose not to subscribe to BICYCLING or MOUNTAIN BIKE, I'll simply write 'cancel' on the invoice and owe nothing. No matter what, the 2 FREE issues and the free gift are mine to keep - they are a gift from K2.

KOWK115