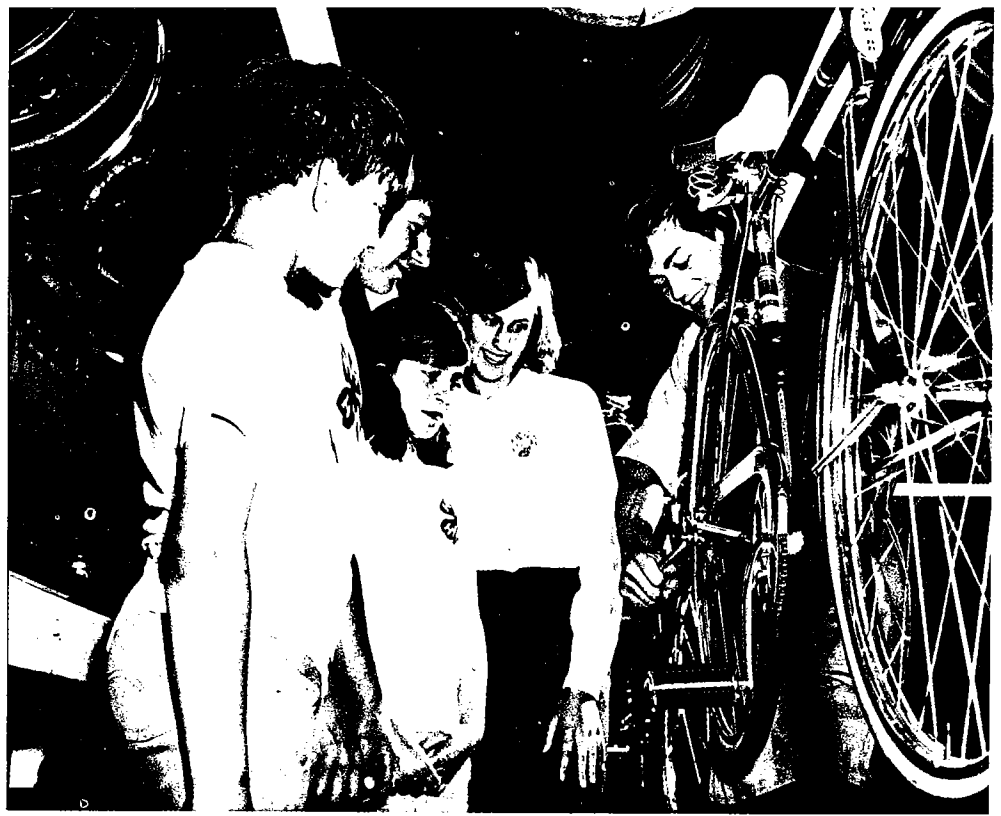


Florida Cooperative Extension Service
Institute of Food and Agricultural Sciences
University of Florida, Gainesville



4-H Bicycle Program

Unit II - Maintaining Your Bicycle



Keep Your Bike in Good Condition

Before beginning Unit II, review what you have learned about Your Bicycle and You in Unit I. Check your knowledge and understanding of the three main types of bikes; parts of the bicycle; how to adjust the seat, handlebars, and chains; how to care for your bike — tire inflation, oiling, cleaning, waxing; rules of good riding and traffic safety, and how to protect your bike against loss or theft.

Above all, you should have a feeling of confidence in your riding ability and your bicycle. You should be able to have fun on your bike safely.

Even the best machine, however, needs adjusting or fixing now and then. Your bicycle is no exception. No

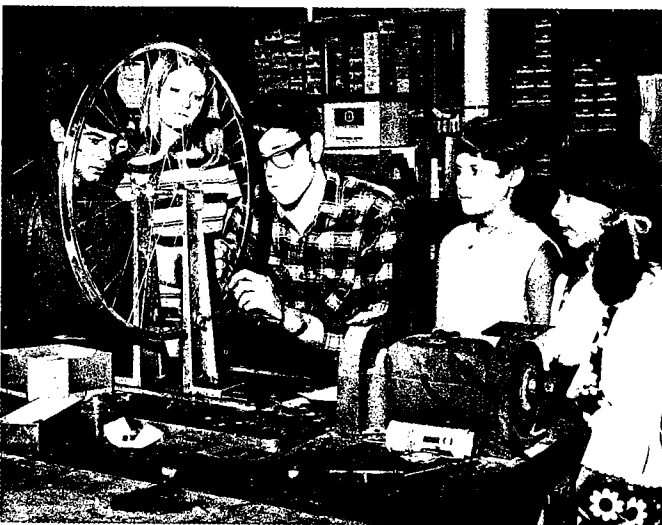
matter how much attention you give it, your bike will need repairs or major adjustments at some time.

Visit your local bike shop. Ask the serviceman to explain the adjustments and repairs he is best equipped to make. These include adjusting brakes, cleaning bearings, and properly aligning wheels for safe operation and least tire wear. You can replace broken spokes yourself, but it is often better to let him do that, too.

If your bike needs repairs or major adjustments, watch him perform them. It will help you understand how your bicycle is constructed. You will receive valuable pointers on how to keep it running smoothly.

Even if your bike seems to be in perfect condition, it's a good idea to have a general check-up every six months. Ask your bike serviceman about it.

Trimming a wheel



Adjustments and Repairs You Can Make

Does your bike still fit you? Check the seat and handlebars to be sure they are adjusted correctly. Chances are you have grown in the last year and that some adjustments are in order. You will enjoy a more comfortable ride if the seat and handlebars are right for you. You will be safer, too.

You can't always have a bike shop handy. There will be times when you will need to make emergency repairs yourself. You may be on a trip away from town. Or you may be unable to get help.

Learn how to patch a tire. Punctures are normal hazards of bike riding. Even though you stay out of junk-filled alleys and keep away from areas of broken glass or new home construction, you can pick up loose nails or stray pieces of glass anywhere.

This publication was promulgated at an annual cost of \$170.00, or 1.7 cents per copy, to be used in a state-wide educational program in bicycle safety.



Checking chain adjustment

Buy a tire patching kit and carry it with you, especially when you are far from home. A bicycle pump is a valuable accessory on hikes and other long trips.

Check Chain Condition

If your bicycle chain shows signs of wear or any links are broken, it should be replaced. You can do it yourself if your bike is a single-speed, two-speed, or three-speed model equipped with a coaster brake. Ask your serviceman to replace the chain if your bike is a five-speed or ten-speed model. The chain on these models does not contain a connector link and replacement involves the use of a special chain tool.

To remove the chain for cleaning or replacing on a model other than a five-speed or ten-speed, turn your bike upside down. Find the chain connector link. Holding the chain with both hands, press your thumbs on both sides of the connector link to spring the chain toward the connector-link bar and loosen it. Pry off the link with a screwdriver and remove the chain.

Be sure the new chain is the same size and length. Have the serviceman check the new chain against the old one. Place it on the sprockets and insert the connector-link pins through the chain so that the bar will attach to the outside edge. Press the bar onto the pins. It snaps in place.

Loosen the rear wheel nuts and slide the wheel backward or forward to adjust the chain tension. Measure with a ruler or yardstick. There should be $\frac{3}{8}$ to $\frac{1}{2}$ inch slack in the middle. Hold wheel at proper tension point, center it in both rear frame members and tighten the wheel nuts. Recheck chain tension.

If the bicycle is a three-speed model, it may be necessary to reset the three-speed control cable adjustment.

To clean an old chain, remove it as above, soak in kerosene and scrub with hands or stiff brush to remove dirt

and grease. Wipe dry, dip in light machine oil and work each joint until it moves freely. Replace and adjust as above, then rub graphite lubricant onto the chain rollers.

Keep Wheels and Spokes Aligned

For safe riding, the wheels on your bike must be in correct alignment. All spokes must be in place and tight. Although you can replace broken spokes yourself, it's a good idea to let your bicycle serviceman check your wheel alignment and make any necessary adjustments whenever a spoke is replaced. Improperly tightened spokes can cause humps and wiggles in the wheel.

Rough riding, particularly over gravel roads or bumpy streets, is likely to cause your bike wheels to get out of alignment. Even normal riding under the best conditions can eventually result in wobbly wheels or faulty wheel alignment.

Tire Care Is Important

The tires on your bicycle are every bit as important as the wheels. Proper inflation means not only a safer and more comfortable ride, it also increases the life of your tires.

Too much pressure will increase wear on the center of the tire tread. It may cause your bike to skid sideways, especially if you are riding on cinders or gravel.

Too little pressure means soft tires and can cause rapid, uneven wear. When you take a sharp curve, under-inflated tires can fold over and pinch the tube, causing a blowout. A low tire may also slip on the rim and cut the tube valve. This means a loss of pressure and a flat tire.

Check your bike manual or ask your tire dealer about the correct pressure for your tires. On some tires, the correct pressure is listed on the side of the tire.

Since tires and tubes "grow" a little with age and wear, it's a good idea to replace the tube whenever you replace a tire. Otherwise, the new tire may pinch the old tube.

To make your tires last longer, do not ride over deep chuckholes or jump curbs. Don't skid tires unnecessarily.

Accessories For More Fun

Your bicycle may have come equipped with certain accessories such as lights, rear reflector, a horn or bell. But there are many other accessories available to make riding more fun.

Visit your local bicycle shop and tire dealer. Look around. You will see many types of lights, horns, bells, special purpose and mod-colored tires, special seats and seat covers, tire pumps, various kinds of chrome trim, baskets, locks, speedometers, rear view mirrors, and other decorative accessories.

Accessories can help you individualize your bicycle. You will enjoy planning how to make your bike different from your friends'.



Bearing Cone Adjustments

An important part of bicycle ownership is keeping the bearing cones of your bike in good adjustment. Not only is it easier and more fun to ride, but a well adjusted bike is safer, too.

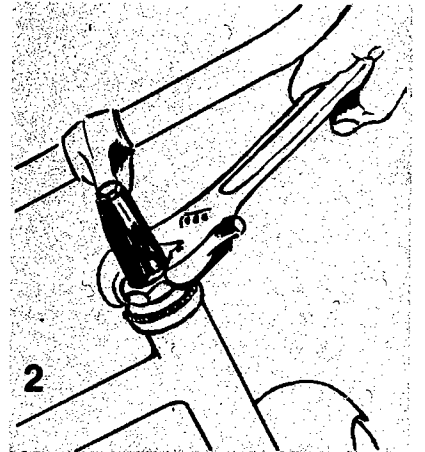
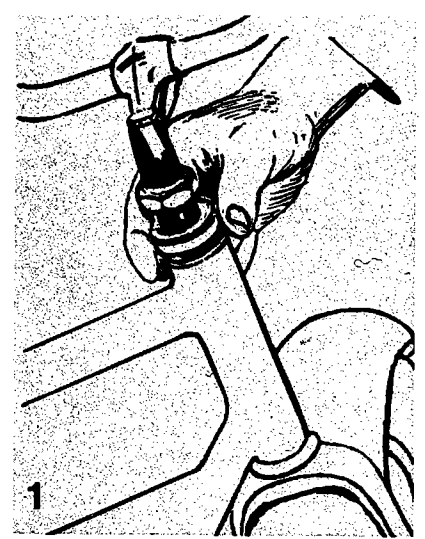
There are four places on your bike that contain bearings that may require adjustment. They are the head, front wheel, crank, and rear wheel.

You should know how to inspect for "drag" and "play." Drag is unnecessary rubbing or binding that keeps a part from moving smoothly or easily. Play is too much looseness, often characterized by wobbling. Both are bad for your bike and interfere with easy riding.

With proper tools and a little instruction, you can adjust most of the bearing cones of your bike yourself.

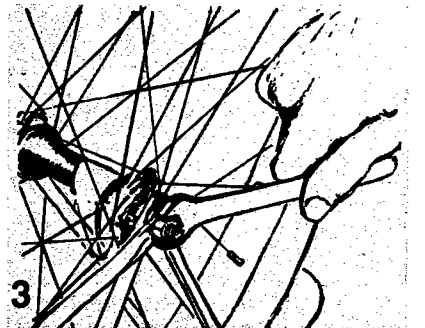
Adjusting Head Bearing Cones

1. With a large adjustable wrench, loosen the large lock nut at the bicycle head where the handlebar stem goes through the frame.
2. Tighten or loosen the adjusting cone located under the lock nut so that the fork swings without drag or play. The adjusting cone either looks like a washer with small ridges on it or there are small notches for a screwdriver blade. Use your fingers (Fig. 1) or a screwdriver to turn it around.
3. Tighten the lock nut against the adjusting cone with a large wrench (Fig. 2).
4. Swing the fork to check adjustment.



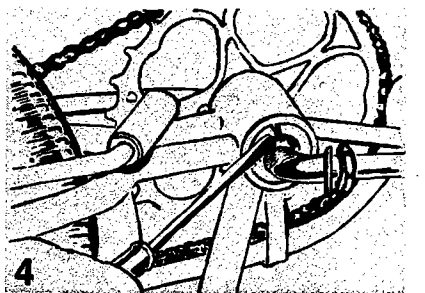
Adjusting Front Wheel Bearing Cones

1. With a thin open-end wrench, loosen the wheel nut on one end of the axle (Fig. 3).
2. Tighten or loosen the adjusting cone so that the wheel spins without drag or play. Hold the wheel with one hand. Back adjusting cone off one-quarter turn to allow slack for take up when the wheel nut is tightened.
3. Tighten wheel nut. Be sure the other wheel nut on the other side is also tight.
4. Spin the wheel to check adjustment.



Adjusting Pedal Crank Bearing Cones

1. With a large adjustable wrench, loosen the large lock nut where the pedal crank goes through the frame. It may be threaded either right or left. Be sure to turn the correct direction to loosen.
2. Tighten or loosen the adjusting cone located under the lock nut so that the crank spins without drag or play. To do this, place a screwdriver in the notch on the edge or face of the cone (Fig. 4) and turn the cone.
3. Tighten the lock nut against the adjusting cone with a large wrench (Fig. 5).
4. Spin the crank to check adjustment. Be sure there is a washer under the lock nut.



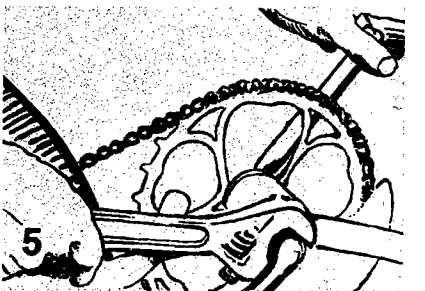
Rear Wheel Bearing Cones

If you find that the rear wheel spins with drag or play, take your bike to a bicycle serviceman to have the bearing cones adjusted. He has the right tools and knows how to do the job properly.

Keep Gears Operating Properly

If your bicycle is equipped with three-speed, five-speed or ten-speed gears, the control cable connecting the shifting levers with the hub or derailleurs must be kept in proper adjustment. Also, the limit adjustments on the derailleurs must be set properly.

If you find that the gears are not operating properly, take your bike to a serviceman. He has the right tools and knows how to make the necessary adjustments.



Adjusting Coaster and Hand Brakes

Brakes and gear-shifting mechanisms are the most critical areas of bicycle maintenance. You should not attempt to adjust either unless you are thoroughly qualified to do so. Most young riders should take their bikes to trained servicemen for gear-shifting or brake adjustments.

There are two main types of coaster brakes, American and foreign, and several modifications of each. American-style coaster brakes are always adjusted from the sprocket side. Foreign-style brakes are adjusted from the opposite side.

Coaster brakes normally need little attention. The moving parts in the brake are rugged and will last a long time with reasonable care. If your brake starts to slip or fails to stop you effectively, take your bike to your serviceman immediately. He can take it apart, clean, adjust, repair, and put it back together safely.

Consult your bike owner's manual for instructions on how to adjust hand-operated caliper brakes. First, it is important for you to keep the sides of the wheel rim that contact the brake shoes clean and free of dirt, lubricants, and wax. You can also adjust the control cables if you know how.

There are three main components of hand-operated caliper brakes: the caliper assembly with brake shoes, hand lever, and control cable. The cable connects the caliper assembly to the hand lever. It is adjusted by changing the position of the adjusting barrel in the caliper arm.

The first step is to loosen the adjusting barrel locknut and turn barrel counter-clockwise out of caliper arm until brake shoes are about $\frac{1}{8}$ -inch from wheel rim. However, if adjusting barrel is unscrewed all the way before adjustment can be made, screw it back again and loosen cable anchor bolt nut. Then, hold brake shoes about $\frac{1}{8}$ -inch from wheel rim, pull cable through anchor bolt, hold taut, and tighten cable anchor bolt nut.

Adjusting brakes



You can do this until lugs on brake shoe contact surface have been worn off and are no longer visible. Then you will have to replace brake shoes and readjust cable.

Check all bolts and nuts of caliper and hand lever assemblies periodically to be sure they are securely tightened.

Hand-operated caliper brakes on derailleur-equipped bikes are of three different types. All have the same basic components, however, and are adjusted in the same manner.



Plan a Hazard Hunt

As a bike rider, you can help your community identify and get rid of dangerous hazards to safe cycling. Many of these same hazards may endanger motorists.

With the help of your leader and local police officers, make a list of potential hazards to safe bike riding. Here are a few examples: broken pavement; chuckholes; bushes or trees growing too close to a corner; busy street intersections without "Stop" or other warning signs; a "hidden" driveway; broken glass, nails or other debris in the street; no street lights or broken lights; slick pavement that might be dangerous when wet.

With your club, plan a hazard hunt in your neighborhood or community. Take your checklist with you. Note potential hazards. See how many each member can identify.

Report hazards to proper local authorities or the persons concerned. Getting rid of major hazards may require official action. Often, though, you will find that a friendly reminder from you as a 4-H member will accomplish wonders. No thoughtful person wants to be responsible for accidents.

Just as maintaining your bike in good running order means more enjoyment for you, maintaining the streets and riding areas of your community contributes to the safety and pleasure of all. For all bike riders, it spells more "fun on wheels."

ACKNOWLEDGMENT

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