

# Mountain Biking **Replacing a Flat Tire**

A NOVICE'S GUIDE



Dakota Hatch

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## How Can This Booklet Help Me?

If you ride a mountain bike, you *will* encounter a flat tire at some point. If you have not yet replaced a tube, you may find the process a bit daunting at first. Therefore, you may find the following terms handy to know.

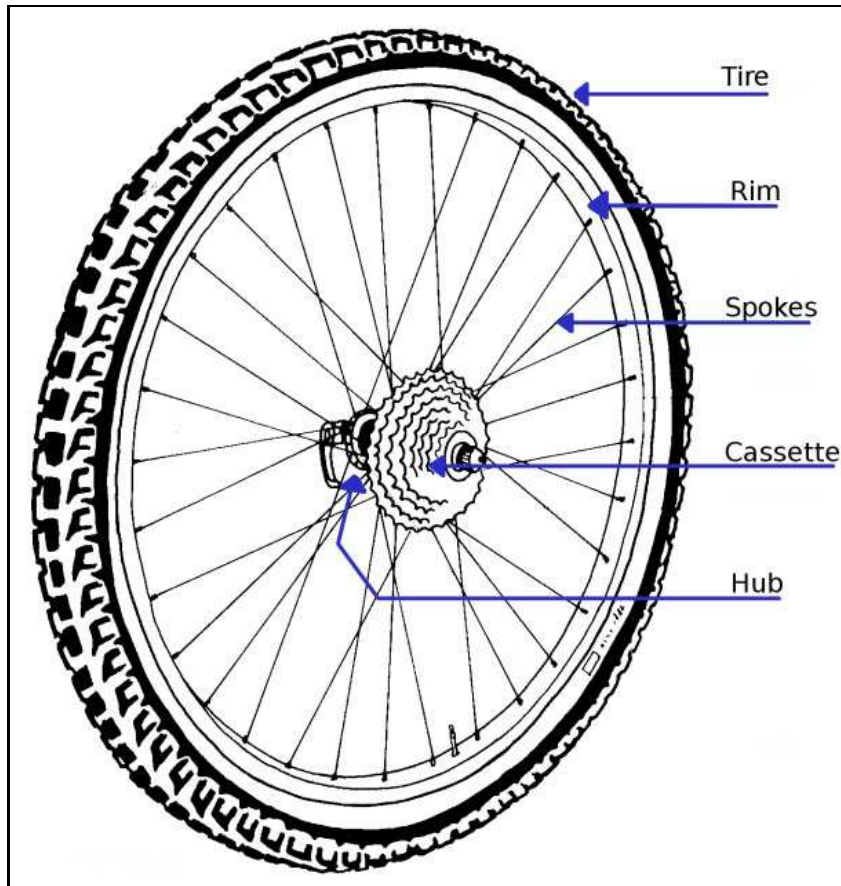


Figure 1: *The parts of a wheel.*

## Which Bike Parts Are Involved?

**Wheel:** One of the more confusing terms when dealing with bikes is “wheel.” For a mountain bike, this term refers to the **hub**, **spokes**, **rim**, **tube**, **tire**, and, for rear wheels only, the **cassette**. All of these parts (with

the exception of the tube, which is hidden inside the tire) are shown in Figure 1.

**Hub:** Located at the center of each wheel. The hub is connected to the frame of the bike by the **skewer**, which passes through the center of the hub.

**Cassette:** The collection of gears to which the chain connects. The cassette is what allows the movement of the chain to turn the rear wheel. It is attached to the right-hand side of the hub.

**Spokes:** The thin metal rods that make the wheel rigid and keep it from buckling. Each spoke attaches on one end to the hub and on the other end to the rim.

**Rim:** The part of the wheel that supports the tire. It is made of metal (usually aluminum) and has a concave shape. The tube fits onto it, then the tire covers the tube.

**Tube:** The part of the wheel that holds air. It is also sometimes called an **inner tube**. It is made of soft rubber, fits into the rim of the wheel, and is protected by the tire. A punctured tube is usually repairable with a patch kit, but replacing it is much faster and easier.

**Tip!**

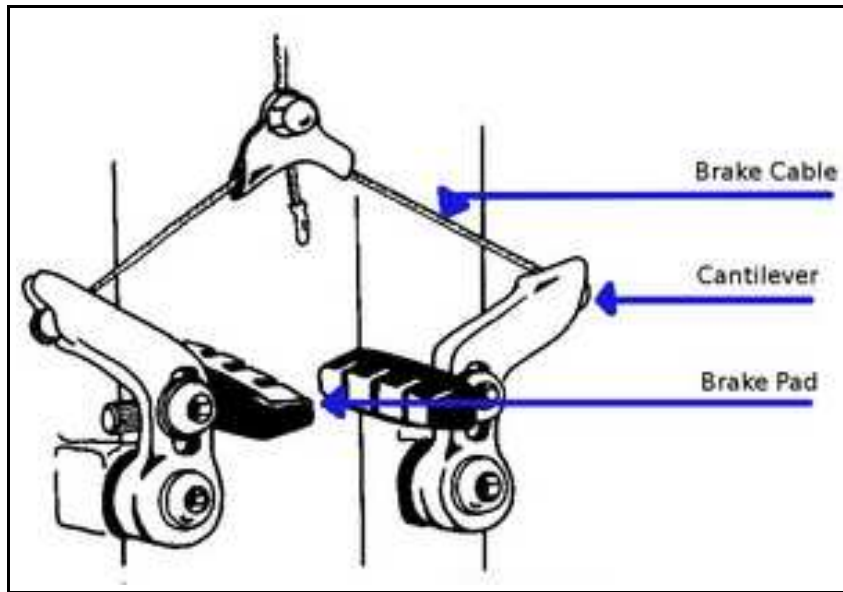
**Always keep a spare tube with you when riding. It will save time (not to mention avoiding a long walk home!).**

**Tire:** Made of thick, tough rubber. It does not hold air itself. It hooks to the rim of the wheel and protects the tube.

**Derailleur:** A complicated device comprised of springs and sprockets which shifts the chain between the gears of the cassette. The rear derailleur is attached to the frame near the hub of the rear wheel on the same side as the cassette. The front derailleur is also located on the right-hand side, but is near the pedals. The front derailleur is not involved when changing either tire.

**Skewer:** A thin metal rod that passes through the hub of each wheel. It may be adjusted by means of a lever on one end. When the lever is closed, the skewer secures the wheel to the frame. When the lever is open, the wheel may be removed.

**Valve:** A small device attached to the tube which fits through a hole in the rim. It allows air into and out of the tube when opened, and though functionally very similar to the valve found on a car tire, the two valves are not compatible. The valve is closed by a nut that can be tightened or loosened, but not removed.

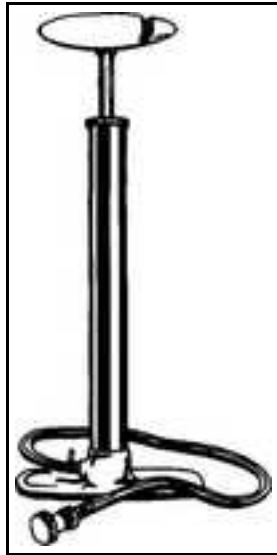


**Figure 2:** *A cantilever brake.*

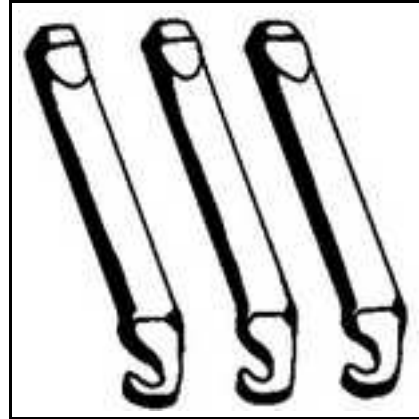
**Brakes:** What slows and stops the bike. Squeezing either of the brake levers attached to the handlebars tightens a **brake cable**, which in turn pulls on a pair of levers (known as **cantilevers**), which force a pair of **brake pads** against the rim of one of the wheels (depending on which brake lever was squeezed). The friction between the pads and the rim slows the wheel. It is a good idea to check that the brakes are working correctly before beginning your ride. For example, if the cable has too much slack in it, pulling the brake lever will not force the brake pads against the rims. See Figure 2 for more detail.

**Periodically check your brake pads for signs of wear, and take your bike in to your local bike shop should they need replacing.**

**Tip!**



**Figure 3:** *A bike pump.*



**Figure 4:** *A set of tire irons.*

## What Tools Will I Need?

**Bike Pump:** Used to inflate a tire, and should be carried with you on your ride. If you do not have a pump along, be prepared to walk home! Bike pumps come in many shapes and sizes. A typical example is shown in Figure 3.

**Tire Iron:** A small lever, usually made of plastic, used to remove a tire. It takes two to remove a tire properly. A set of tire irons usually contains three or four, because some people occasionally find it easier to use more than two when removing a tire. (Figure 4.)

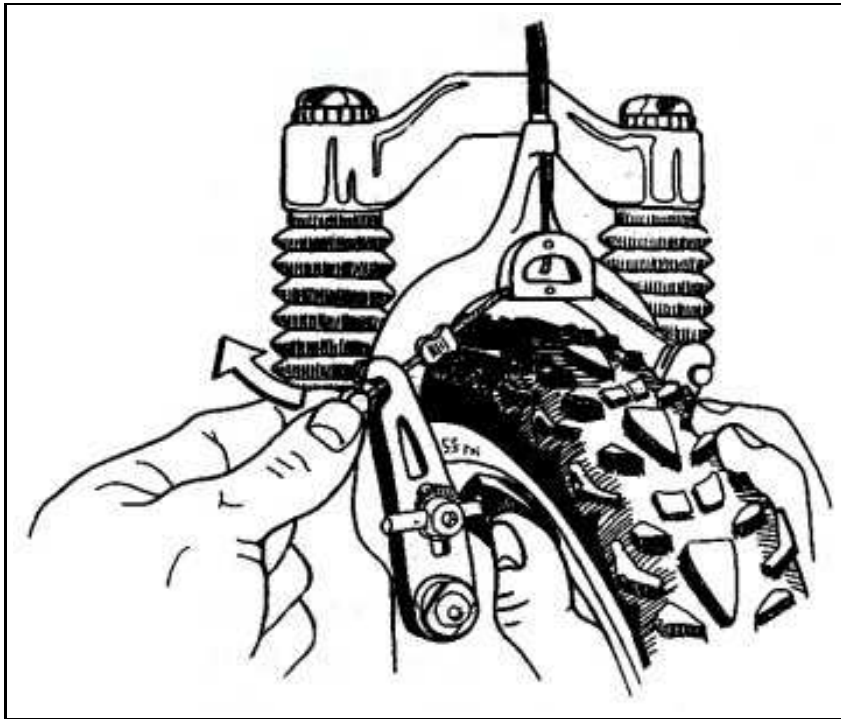
**Tip!**

**If you do not have any tire irons, you can substitute two dull flat-head screwdrivers.**

**Spare Tube:** Not precisely a tool, but a critical item in your tool kit all the same. You can repair a flat tube with a **patch kit**, but it can be a bit tricky. The easy answer, particularly when you are out on a ride, is to carry a spare tube, then attempt to patch your old one when you get home.

## What Do I Need to Do?

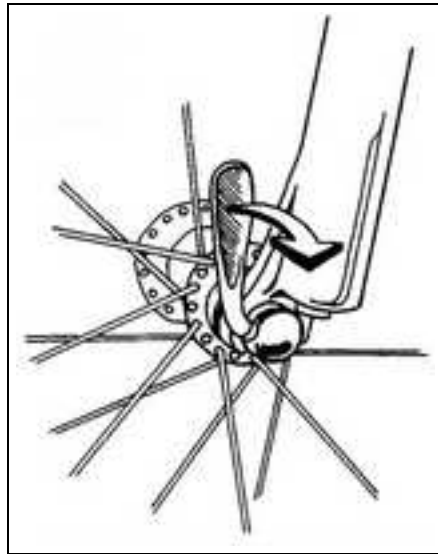
- 1 Assemble the tools and parts needed to fix the tire.
  - 1.1 Two **tire irons**.
  - 1.2 A **bike pump**.
  - 1.3 A **spare tube**.
  - 1.4 **Patience**.



**Figure 5:** *The cable is unhooked from one cantilever.*

- 2 Remove the wheel from the bike frame.
  - 2.1 Flip the bike upside down and balance it on the seat and the handlebars. If you have chosen a relatively flat piece of ground, and keep your front wheel straight, your bike will be stable.
  - 2.2 If fixing a rear wheel, remove the chain.

- 2.2.1 Change into top gear. The chain will now be on the smallest gear.
- 2.2.2 Lift the chain off the top gear. (There is very little tension on the chain, so this will be easy.) The chain will still be attached to the derailleur (which is attached to the frame), but it will no longer be resting on any part of the wheel.

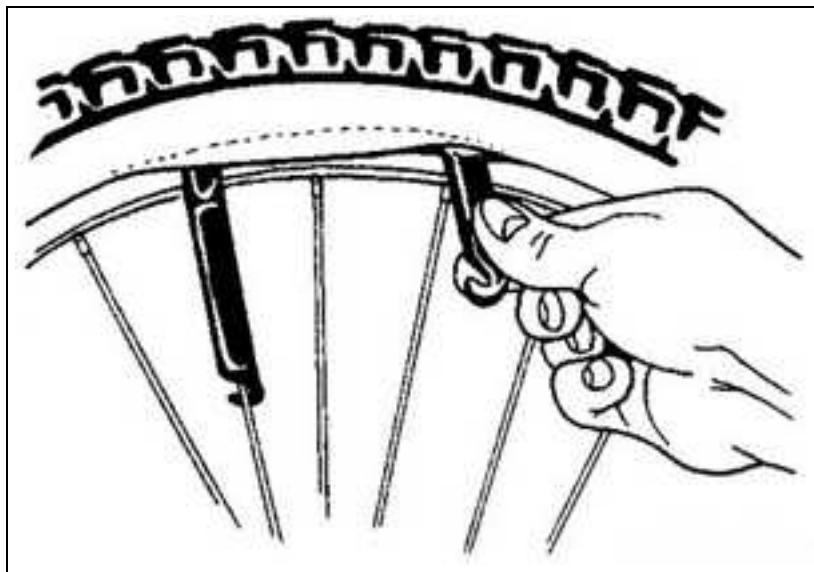


**Figure 6:** *Flipping the quick release lever on the skewer.*

- 2.3 For either wheel, unhook the brake cable from the appropriate cantilever.
  - 2.3.1 Squeeze the brake cantilevers together, as in Figure 5. This will create some slack in the brake cable.
  - 2.3.2 Use the slack in the cable to unhook it from whichever cantilever allows it. It will remain attached to the other cantilever. (Figure 5.)
- 2.4 Loosen the wheel by flipping the quick-release lever on the skewer. The wheel will now be loosely resting on the frame. (Figure 6.)
- 2.5 Remove the wheel.

### 3 Deflate the tube.

- 3.1 Unscrew the valve nut. The nut will remain attached, but the valve can now be depressed easily.
- 3.2 Depress the tip of the valve. Air will begin escaping. You will hear a whistling sound if there is any air left in the tube.
- 3.3 Continue to depress the valve until you can no longer hear air escaping.



**Figure 7:** Use the tire irons to remove the tire.

#### 4 Remove the tire.

- 4.1 Insert the flat end of both tire irons between the rim and the tire. They should both be on the same side, as seen in Figure 7.

**Be careful to avoid pinching the tube between the rim and the tire irons, as this may rip or tear the tube, preventing later repairs.**

**Caution!**

- 4.2 Lever each tire iron outwards in the direction of the spokes until the tire pops free of rim on one side.

4.3 Hook one of the tire irons on a spoke to keep it in place (see Figure 7) and slide the other tire iron around the circumference of the rim. One entire side of the tire is now freed from the rim.

4.4 Completely separate the tire from the wheel.

5 Remove the tube.

**Tip!**

**Most punctures are repairable, so be sure to save your old, deflated tube.**

6 Inspect the inside of the tire for any sharp objects. If the flat was caused by a puncture from a nail, thorn, or other sharp object, it may still be embedded in the tire. If you see anything, carefully remove it.



**Warning! If the object is sharp enough to puncture the tube, it is sharp enough to puncture your hand!**

7 Partially inflate the new tube.

7.1 Unscrew the valve nut.

7.2 Attach the bike pump to the valve.

7.3 Pump until the tube can hold its own shape.

8 Replace the tire.

8.1 Place the partially inflated tube onto the rim, with the valve inserted through the rim's valve hole.

8.2 Place the tire over the tube, tucking the edges of the tire into the rim on one side.

8.3 Add air until the tube is firm.

8.4 Secure the tire with a tire iron by levering the still-free edge of the tire into the rim. The edge of the tire will be completely inside the rim on both sides.

**Caution!**

**Be careful to avoid pinching the tube between the rim and the tire iron. This may rip or tear the tube.**

8.5 Fully inflate the tube. The tire is now rock-hard to the touch.

8.6 Tighten the valve so that air cannot escape.

**Warning! Ensure that the edges of the tire are fully secured within the rim on both sides of the wheel. If they are not, deflate the tube and return to step 8.2**



9 Reassemble the bike.

9.1 Replace the wheel onto the bike frame.

9.2 If fixing a rear wheel, replace the chain.

9.2.1 Lift the chain back onto the top gear.

9.2.2 Spin the pedals. The wheel should turn easily.

9.3 For either wheel, hook the brake cable back onto the cantilever.

9.3.1 Squeeze the brake cantilevers together, as in Figure 5.

9.3.2 Use the slack in the cable to hook the end of the cable into the slot in the free cantilever. The cable is now attached to both cantilevers.

9.4 Spin the wheel. The wheel will turn freely.

9.5 Tighten the skewer by closing the quick-release lever.

9.6 Place the bike right-side up.

10 Store all tools.

**Warning! Before resuming your ride, ensure that the wheel is secure, and that the brake cables are attached! Test the brakes to be certain they are fully functioning.**



11 Enjoy the rest of your ride. You earned it!

## Where Can I Go for More Help?

This guide is no substitute for a good maintenance manual, and one of the best is *Zinn & the Art of Mountain Bike Maintenance*, by Lennard Zinn. Not only is this manual clear and well written, it also covers almost every maintenance task you will ever need to perform on your mountain bike. Its excellent illustrations were the source for the figures in this guide.