

### Fixing a Flat

#### STEP 1 – Check out the situation

First think about how the tire went flat. Did it leak slowly, or all of a sudden, maybe with a loud bang? This can give you hints about the size and type of hole you're looking for.

Next look over your wheel. Are there any holes or cracks in the sidewall of your tire? Are the tires worn and bald? Are there any obvious causes of the flat, i.e. nails, tacks, glass, etc?

Also check for problems with the valve. Is it coming out of the rim straight? There are two common types of valves, Schraeder and Presta. Schraeder (or American) valves are the kind you can fill up at gas station pumps. Presta (or French) valves can hold a lot more pressure. Presta valves have a little head you turn to open or close them. Make sure the valve is open when you want to fill the tube, and if your tire has gone flat, make sure it's closed all the way and that air isn't leaking out there. You can check if either type of valve is leaking air by taking off the cap and putting a bit of spit into it. If it bubbles, you know air is leaking. Leaky Schraeder valves can often be fixed by tightening the valve core.



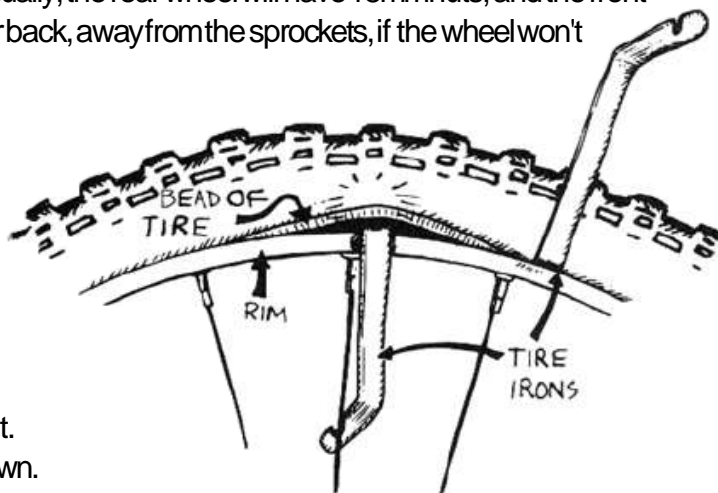
#### STEP 2 – Remove the wheel

For a rear wheel, shift your gears down to the smallest sprocket before removing it. Since the tube is flat, you shouldn't have to disengage the brake to get the tire through them. Loosen the nuts on either side of the axle to take it off of the wheel. Use the right sized box wrench rather than an adjustable one whenever you can, since over time adjustable wrenches will strip the nuts. Usually, the rear wheel will have 15mm nuts, and the front 13mm or 14mm. For a rear wheel, pull the derailleur back, away from the sprockets, if the wheel won't come out on its own.

#### STEP 3 – Remove the tire and tube

First see if you can take the tire off by hand. If this isn't possible, use tire levers. On the opposite side as the valve, insert a lever between the rim and the tire, pulling it the bead of the tire out. You can hook this lever to a spoke to keep it from popping out. Take another one and do the same a little further down.

You can now either use a third lever, or just use the second one to keep pulling the tire up further down. Once about one quarter of the tire is free, you should be able to get the rest off by hand.



After the first side of the tire, called a bead, is free, take the tube out, starting away from the valve. The whole tire should now easily come off. Make sure you remember where the valve lined up on the tire. You can even mark this spot with chalk or a pen.

#### **STEP 4 – Find and patch the hole**

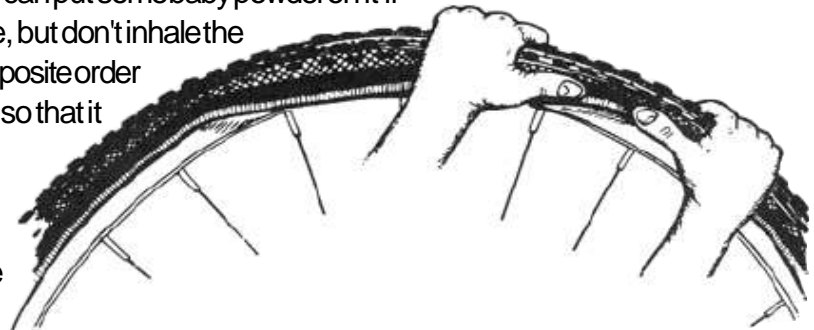
If you can't tell where the hole is right away, inflate the tube until it's about as big around as the tire. Pass the tube around your head, listening for air, near a sensitive spot like your cheek or eye so you'll feel the air blowing out of the hole. If you still can't find it, fill a bucket with water and pass the tube through it, watching for air bubbles that will reveal the hole's whereabouts.

Once you've found it, decide if it can be patched. Holes on or near the valve are not, and neither are holes longer than an inch, or bigger than the top of a pencil's eraser. You'll have to get a new tube in those cases. Clean and dry the area around the hole and rough it up with some sandpaper. Throw away those cheese-grater style things that come with some patch kits, they treat tubes the way real cheese graters treat cheese. If the hole is near a seam, you'll have to flatten it by sanding it.

Put a thin, smooth layer of rubber cement on the hole, a bit bigger than the size of the patch you want to use. Peel off the bottom of your patch. This layer is usually aluminum, but sometimes clear plastic. Leave the top layer of clear plastic on. Put the patch on and push down on it for about a minute, especially the edges, being careful not to move it at all.

Before putting everything back together, check if the cause of the flat is still around. Rub your finger or a rag inside the same part of the tire that you found the hole at. Check your rim tape and the rim itself in the same area. You can also check for a second hole now. Sometimes a smaller hole won't be noticeable until the first one is patched.

When you're replacing the tube, you can put some baby powder on it if you want to prevent it from sticking to the tire, but don't inhale the stuff. Put everything back together in the opposite order you took it apart. Inflate the tire just enough so that it holds its shape before you put it back on, to prevent it from folding, which causes flats. Don't use tire levers to replace the tire. You need to do this by hand or you can pinch the tire. If it seems tight, try working the tire's "slack" down to where you need it to be.



Don't fully inflate your tire until you've replaced it in your frame, so you don't need to worry about getting it by your brakes. Center the wheel according to your frame, not according to your brakes. The tire should say what pressure to inflate it to. Mountain bikes are usually between 35 and 45 psi, and road bikes are 60 psi and up. In winter, you might want to run a little less to get better traction. As you're inflating, make sure the tire is seated properly in the rim and that the tube isn't bulging out from under it.

After that it's high-fives all around!