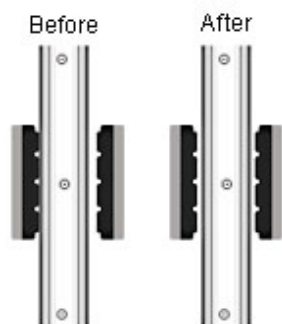


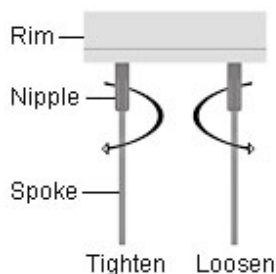
# Bicycle Wheel Alignment Instruction

The spokes on your wheel are what give it strength and keep it in alignment (in true). Damage to the wheel, stress on the spokes of just plain wear and tear and age can cause the wheel to go out of alignment. When this occurs, the wheel needs to be aligned (trued) by adjusting the spokes. Adjustment of the spokes has only so much effect in this procedure, but if your wheel is not damaged or stressed beyond a point where adjusting the spokes will do the job, it's possible to get your wheel running true to form.

However, if you're out on the road and break a spoke or cause some other damage to your wheel, you might not have a choice but to adjust the spokes to a degree. If a wheel goes out of true a small amount and is rubbing on the brake as you ride, you can loosen the brake slightly (by loosening the brake cable or maybe undoing the brake quick release if you have one) so you can get home and then take it a bike shop to have it repaired at your leisure. If you have to loosen the brake so much that the brakes will no longer work effectively, then you need to make a spoke adjustment.



The basic idea behind adjusting the spokes is simple. Use the gap between the brake shoes and the rim as a guide. If the wheel is rubbing on the left hand brake shoe (see the drawing at the left), you need to tighten the spoke(s) on the right side of the wheel to pull it back into shape and vice versa. Normally, you want to tighten the spoke(s) but if the spoke(s) in question are already tight you can get the same results, although to a lesser degree, by loosening the spoke(s) on the opposite side if the wheel. If the spoke(s) on the side you need to tighten are already super tight, and if the spokes you have to loosen on the opposite side are already super loose, that means that your wheel is 'sprung' and your only choice is to call a cab or disconnect the brake completely and ride home very carefully keeping in mind that you only have one functioning brake. If you have actually broken a spoke, your only choice is to tighten the spokes on the opposite side of the wheel in the area of the broken spoke and hope for the best.



You can use a spoke wrench if you have one in your tool kit, or you can use a small adjustable (crescent) wrench. Think of a spoke as a bolt and nut. The spoke represents the bolt and the nipple (that thingie that pokes through the rim) represents the nut. Just as with a standard bolt, to tighten a spoke you turn the nipple clockwise and to loosen it you turn it counterclockwise (looking from the top of the wheel in towards the hub). The easiest way to determine which way to turn the wrench is to look at the wheel from the side instead. If you want to tighten the spoke work the wrench towards you. To loosen the spoke work the wrench away from you. The most important thing to remember is to only tighten (or loosen) the spoke a half of a turn at a time. Then check to see if you got the desired result. If not, keep repeating these two steps until you get the rim the way you want it. Just make sure you don't over tighten the spokes. By that I mean don't round out the squared off surfaces on the nipple to the point where the wrench no longer has any effect. And also make sure you don't loosen the spokes so much that there is no tension left and they just 'float'.

For a wheel to be properly aligned and stressed, all the spokes need to be within a certain tension range. Each time you adjust a spoke you must compensate for this adjustment to maintain the proper tension range for that wheel. Also, each time you make an alignment adjustment to one area of the rim, you are also effecting other areas. If you overdo these adjustments you can end up with what looks more like a pretzel than a wheel.



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