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## wired!

### gear cable replacement

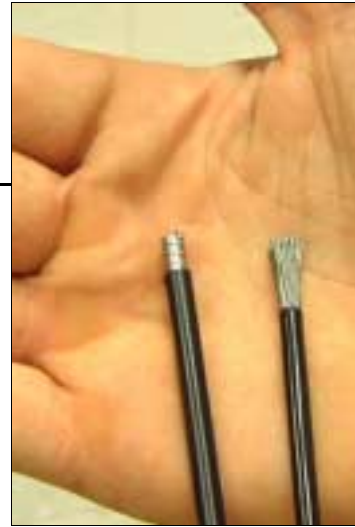
- Difficulty Grading – Novice
- Wrench Time – 1/2 hour
- Tip, Strip or Tune – Strip
- Spares Needed – Gear cable set (inner wire, outer casing and end caps) around £8-£10.



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Gear and brake outer looks similar but are in fact different. Make sure you get the right type. On the left is the brake outer and on the right is the gear outer. Gear outer is thinner (usually 4mm) and very stiff in compression so that the cable length is kept constant for accurate indexing. Use a good quality inner and outer cable (we recommend Shimano or Gore if you're feeling really flush), it may be expensive but it's definitely worth it in the long run.

1



Loosen the Allen bolt (usually 5mm) clamping the cable to the derailleur.

2



Cut the nasty frayed end of the cable.

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Pull the inner cable out of the sections of casing. Pedal the bike a couple of revolutions to drop the gears into the smallest sprocket. Change gear at the shifters to the highest gear (biggest number on the indicator).

4

Remove the sections of cable from the bike, but don't chuck them away just yet. SRAM users skip to section 9. Owners of Shimano equipped bikes, you may have to remove a screw in the shifter body to gain access to the cable. Cheaper or older Shimano shifters may not have this screw, in which case the cable can usually just be pushed through an exposed hole.

5



Remove the screw with a Phillips screwdriver. Hold your other hand under the shifter to catch the screw.

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Thread the cable through the hole in the shifter body. File the old cable in the round filing cabinet.

7



Spray some light lubricant, such as GT85, into the shifter body to get rid of dirt and muck.

8



SRAM owners - slide the hatch on the shifter body with your fingernail or a screwdriver. Take care not to lose this part.

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With the front SRAM unit you can just feed the cable through the hole and pull it out.

10



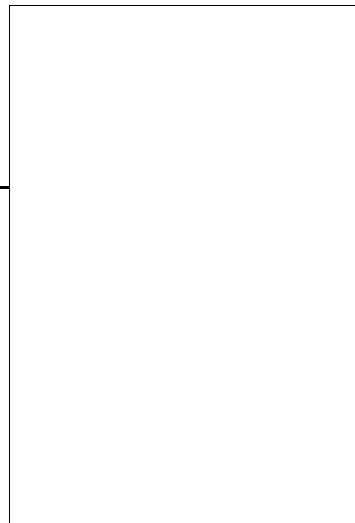
The rear SRAM unit requires you to remove a small grub screw from above the cable nipple. Use a 2.5mm Allen key to remove the screw and feed the cable through the hole in the shifter.

11



Whichever type of shifter you're using fit the new inner cable and replace any covers or screws that came from the shifter. Keep the new cable off the floor where it can pick up dirt.

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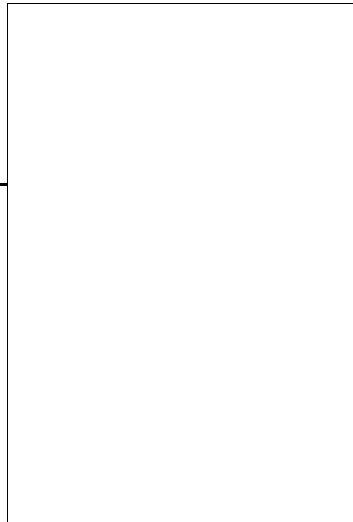
Time to cut the new sections of outer casing. Usually you can use the old sections of outer as a guide to cut the new ones, but don't assume they were right in the first place! The best way to ensure accurate shifting is to size the new cables to your bike. The cables should follow smooth curves between frame stops without making dramatic changes in direction. Keep the length of the outer as short as possible while maintaining these smooth curves. Pay particular attention between the shifters and the frame and between the mainframe and swingarm on full-suspension bikes. Turn the bars fully both ways to check there is sufficient length. With full-suspension bikes sit on the bike and take this as the neutral position. The cable should be long enough to cope with the full extension of the suspension but not so long that it becomes too looped out under full compression.

13



Most bikes benefit from routing the front gear cable around the right side of the head-tube and the rear gear cable around the left side. This creates a smoother curve for the cable and avoids the casing rubbing through the paint. Cross the exposed inner cables over into the next frame stops to achieve better routing for the casing.

14



Cut the casing with a good quality set of cable cutters, such as those made by Shimano, Park, Wrench Force and Hozan. These cost at least £20 but you can't do without them.

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Use a bradawl or a miniature screwdriver to open out the inside of the casing. Good quality casing has a Teflon liner to cut down on friction.

16



Each end of the casing should be fitted with plastic ferrules. At 50p they're not cheap so if your old ones are in good enough nick they can be reused. Spray with lubricant and clean the old ferrules before use.

17



Clean the cable stops on the frame with lubricant and a rag.

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The last section of rear derailleur casing collects a lot of dirt that hampers the shifting performance. Use the special sealed ferrule with its extended liner and cover with the rubber boot.

19



With all the sections of outer casing installed, insert the inner cable. Add donuts to exposed sections to protect the paintwork and stop the cable making noises as it slaps the frame.

20



Clean the rear derailleur with spray lubricant and a rag. Pay particular attention to the rubber boot protecting the barrel adjuster.

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Now it's time to hook up the cable and adjust the gears. With the chain on the smallest sprocket look from behind the derailleur towards the front of the bike. The top jockey wheel should be aligned directly beneath the outer edge of the smallest sprocket (the edge furthest away from the wheel).

22



If the derailleur doesn't sit below the outside edge of the smallest sprocket you'll need to adjust the screw marked H. On Shimano derailleurs this is the higher of the two screws on the back. Turning the screw clockwise will move the derailleur towards the spokes and vice versa. It should also hang vertically rather than being angled into, or away from the wheel. Should the derailleur hang at an angle it means that the hanger is bent and will need replacing or straightening.

23



The front derailleur is adjusted via the two screws atop the cage. On SRAM derailleurs the screw closest the frame adjusts the position in the small chainring. Turning the screw clockwise moves the derailleur away from the frame and vice versa.

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Shimano derailleurs are the opposite. Use the outer screw to adjust the position in the small chainring. When the chain is on the largest rear sprocket it should be as close as possible to the inner plate of the derailleur cage without touching it.

25



Insert the inner cable through the rubber boot (if fitted) and the barrel adjuster to the clamp. Pull the cable taught with one hand and clamp the cable with the Allen bolt with the other hand. Make sure the cable is seated in the groove, if any, and underneath any washers.

26



Cut off the excess cable leaving at least 5-6cm between the clamp and the cut end.

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Start setting up the front indexing first. If you haven't replaced the front cable just shift into the middle chainring and skip to step 29. Try and shift the chain into the middle chainring. If it won't go unwind the barrel adjuster on the shifter until it pops onto the middle ring. Try to shift into the large chainring. Unscrew the barrel adjuster until it shifts up. If you fully unwind the barrel adjuster wind it back, loosen the cable clamp and pull the cable through to take up any slack. Repeat the procedure until you can shift through all three chainrings. In the outer chainring check the limit screw adjustment. The chain should be as close as possible to the outer plate of the derailleur cage without touching it. Use the outer screw on SRAM derailleurs and the inner screw on Shimano derailleurs to adjust the position. With the front indexing set up, shift into the middle chainring.

28



In the outer chainring check the limit screw adjustment. The chain should be as close as possible to the outer plate of the derailleur cage without touching it. Use the outer screw on SRAM derailleurs and the inner screw on Shimano derailleurs to adjust the position. With the front indexing set up, shift into the middle chainring.

28a



Now you're ready to tackle the rear indexing. With the chain on the smallest sprocket try and shift into the next sprocket. If it shifts smoothly, move onto the next sprocket. If not, unwind the barrel adjuster on the derailleur until the chain pops up. Repeat the process for each of the gears until you reach the largest sprocket. If the chain won't go into the largest sprocket the derailleur limit screw will need adjusting. Even if it does engage it's still worth checking the limit adjustment.

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With the shifter in the highest gear look from behind the derailleur toward the front of the bike. The top jockey wheel should be directly in line with the inner edge of the largest sprocket (the edge closest the rear wheel).

30



If the rear derailleur doesn't sit directly below the inner edge of the largest sprocket adjust the screw market with an L. Turning the screw clockwise will move the derailleur away from the spokes and vice versa. Shift back into the smallest sprocket and run through the gears one at a time making sure each shift is smooth and quiet.

31



Grasp an exposed section of inner cable and pull hard. This stretches the inner cable and makes sure the cable is seated. Re-check the gears, adjusting if necessary.

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Crimp a cable end cap onto the end of the cable to stop it fraying.

33

